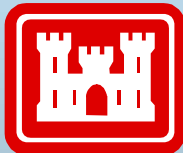


JACKSONVILLE DISTRICT REGIONAL SEDIMENT MANAGEMENT

by Thomas D. Smith, P.E.

Jacksonville District

U.S. Army Corps of Engineers



US Army Corps
of Engineers®

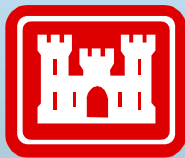


TOPICS

- ◎ **NORTHEAST FLORIDA:**
 - ◎ **Demonstration Project Updates**
 - ◎ **RSM Program Notes**
- ◎ **SOUTHWEST FLORIDA:**
 - ◎ **Workshop Results**
 - ◎ **RSM Program Notes**
- ◎ **FY03 MILESTONES AND FUNDING:**

NORTHEAST FLORIDA

REGIONAL SEDIMENT MANAGEMENT



US Army Corps
of Engineers®



**BYPASS SAND
AT
ST. AUGUSTINE INLET**

[illegible]

ST. AUGUSTINE INLET

EBB SHOAL

3.5Mcy (80% Fed/20% Non-Fed)

NAVIGATION CHANNEL

Sept. 16, 1999

**ST. JOHNS COUNTY SHORE PROTECTION PROJECT
BORROW AREA**



Sept. 16, 1999



MAY, 2000

2000/ 5/10



July 11, 2002

uction
vised by:



Army Corps
Engineers
Orville
St.

Beach Nourishment, St. Johns County Shore Protection Project, Florida

GREAT LAKES



Contractor: **DREDGE & DOCK CO.**
Great Lakes Dredge and Dock
2122 York Rd.
Oak Brook, IL 60521

Safety is Requirement

Beach Nourishment
Protection Project, FL
Great Lakes Dredge
Oakbrook, IL

This project has
operated

RSM PROGRAM NOTES

- **LESSONS LEARNED:**

- ◆ **Cost Savings Realized by Combining Projects**
- ◆ **Mitigation not Litigation**

- **PROBLEMS ENCOUNTERED:**

- ◆ **Funding Restrictions Resulted in Two Mobilizations**
- ◆ **Land Locked the Fishing Pier**

- **RECOMMENDATIONS:**

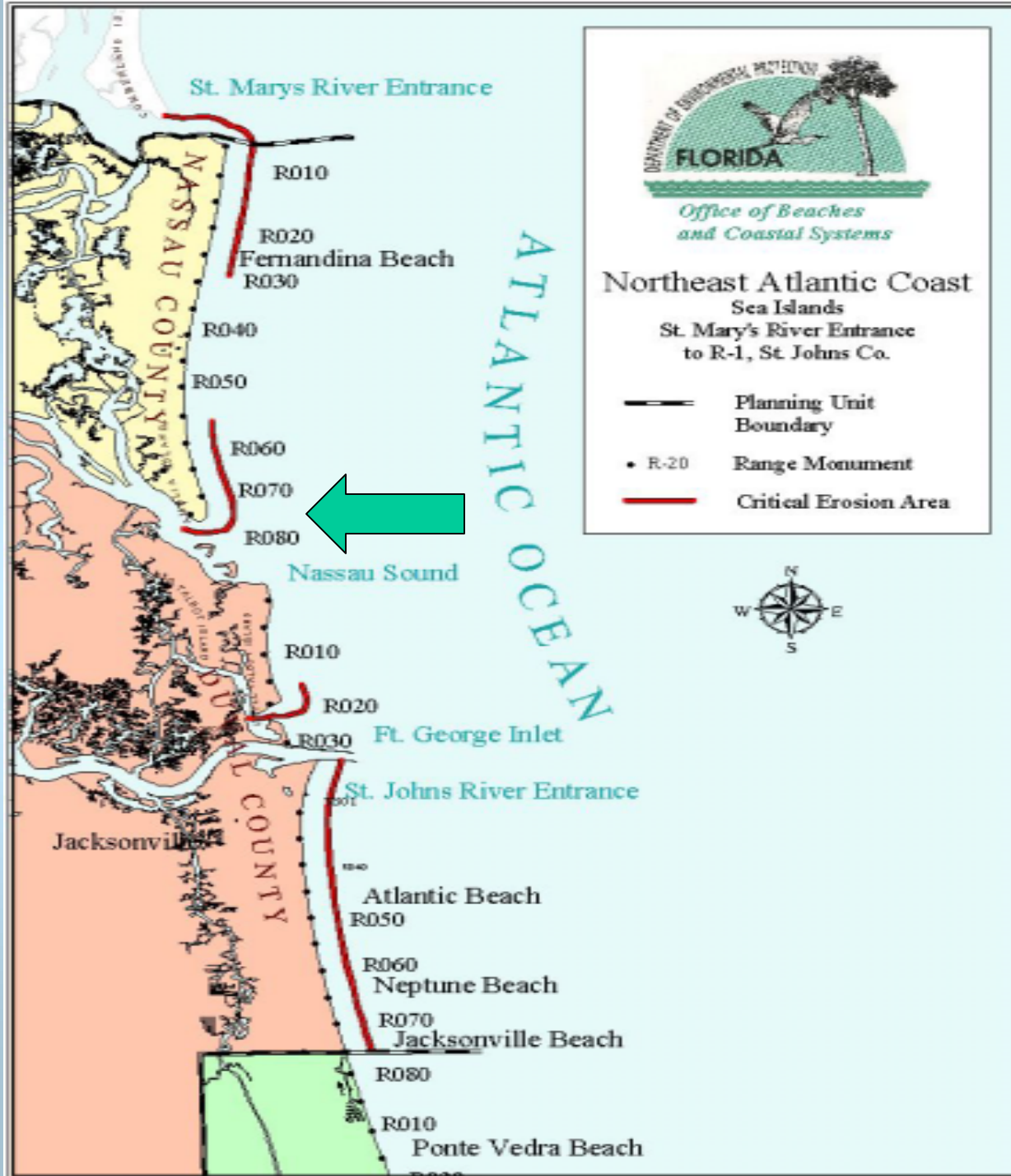
- ◆ **Identify Opportunities to Link Projects**
- ◆ **Include Navigation Impact Studies in Plan Formulation**

- **PLAN FOR FY03:**

- ◆ **Monitor Borrow Area Infilling**
- ◆ **Monitor Project Performance**

STABILIZE SOUTH END OF AMELIA ISLAND

STABILIZE SOUTH END OF AMELIA ISLAND





Sept. 16, 1999

TOTAL VOLUME

approximately 330,000 cubic yards

250,000 cy



US Army Corps
of Engineers®

80,000 cy



Jan. 25, 2001

INVESTIGATIONS

■ Purpose:

- ◆ Phase I: Characterize Existing Conditions
- ◆ Phase II: Evaluate Impacts of Past Engineering Actions
 - ◆ Offshore Borrow Site
 - ◆ Non-Federal Shore Protection Project
 - ◆ Geotextile Groin Field
- ◆ Phase III: Evaluate Stabilization Alternatives
 - ◆ No Action (includes current nourishment)
 - ◆ Tidal Channel Stabilization through Dredging
 - ◆ T-head Groin Field

INVESTIGATIONS

■ **Status:**

- ◆ **Phase I & II: 50%Fed and 50%State**
 - ◆ **Completed**
- ◆ **Phase III: 100% State**
 - ◆ **Completed:**
 - **Tidal Circulation Modeling**
 - **Evaluation of Tidal Channel Oscillation**
 - ◆ **Ongoing:**
 - **Wave Transformation Modeling**
 - **Final Evaluation**
 - **Reporting Results**

RSM PROGRAM NOTES

■ LESSONS LEARNED:

- ◆ Florida Inland Navigation District Valuable Partner
- ◆ State of Florida Contributed Funds through F.I.N.D.

■ PROBLEMS ENCOUNTERED:

- ◆ Temporary Solutions Inadequate
- ◆ Limited Federal Authority

■ RECOMMENDATIONS:

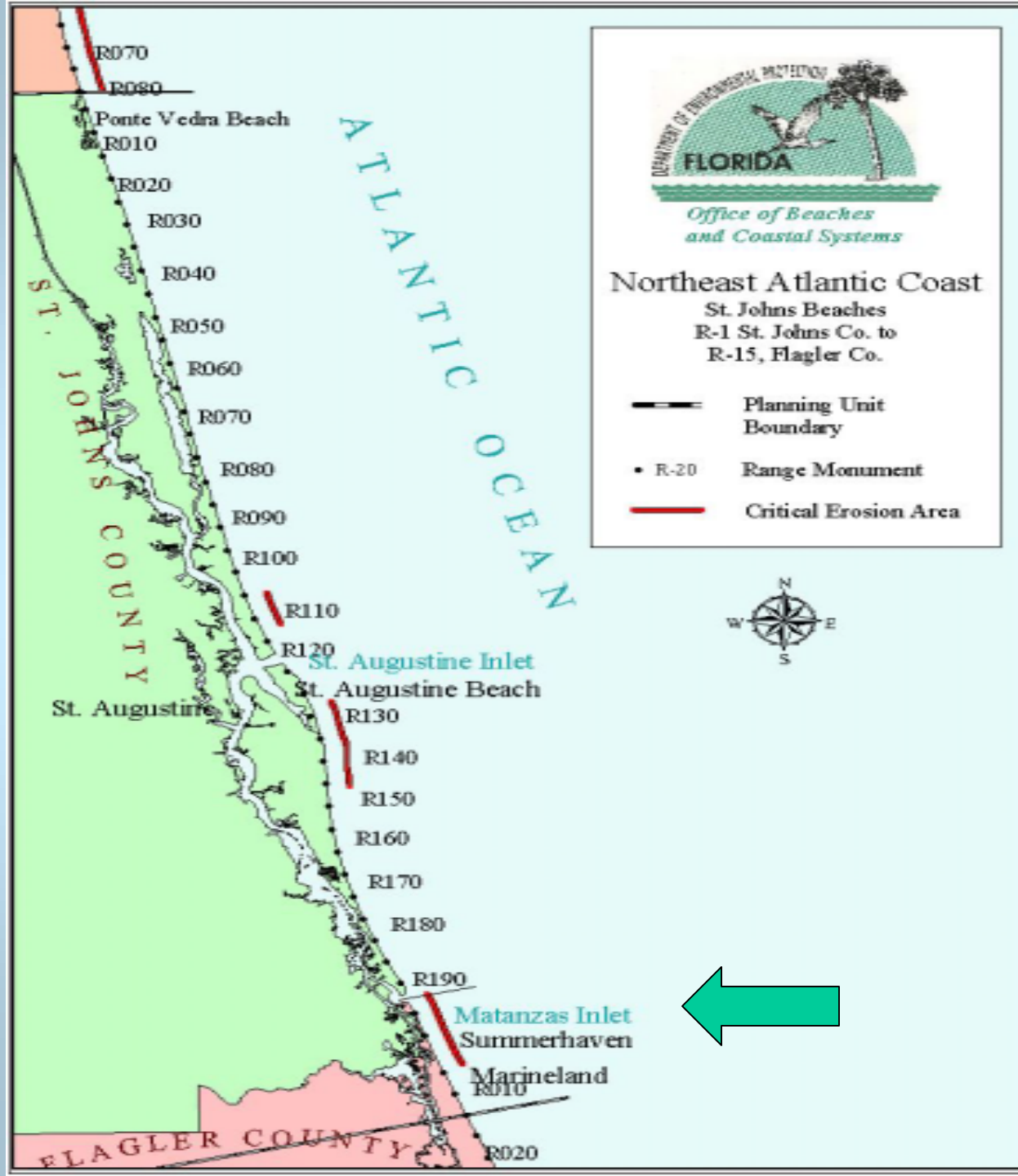
- ◆ Maximize O&M Beach Placement
- ◆ Leverage Funds

■ PLAN FOR FY03:

- ◆ Complete Alternatives Analysis
- ◆ Coordinate Recommended Plan with Stakeholders

OFFLOAD DISPOSAL AREAS

OFFLOAD DISPOSAL AREAS





Sept. 16, 1999

SJ-1



Beach Placement Area

Sept. 16, 1999

1.0Mcy (80% FIND/20% STATE)



2001



2001

RSM PROGRAM NOTES

- **LESSONS LEARNED:**

- ◆ **Florida Inland Navigation District Valuable Partner**
- ◆ **State of Florida Contributed Funds through F.I.N.D.**

- **PROBLEMS ENCOUNTERED:**

- ◆ **Temporary Solutions Inadequate**
- ◆ **Limited Federal Authority**

- **RECOMMENDATIONS:**

- ◆ **Maximize O&M Beach Placement**
- ◆ **Leverage Funds**

- **PLAN FOR FY03:**

- ◆ **None**

DEMONSTRATE INNOVATIVE TECHNOLOGIES

PUNAISE SUBMERGED PUMP



SECTION 227

■ MIAMI BEACH:

- ◆ Authorized as a Section 227 Demonstration Project
- ◆ 63rd Street Erosional Hot Spot Identified as Demo Site

■ PRIOR INVESTIGATIONS:

- ◆ Dade County Shore Protection Project Reports
- ◆ 2001 Jacksonville District Project Evaluation Report
- ◆ 2001 CSI Coastal Processes Report

■ ONGOING ACTIVITIES:

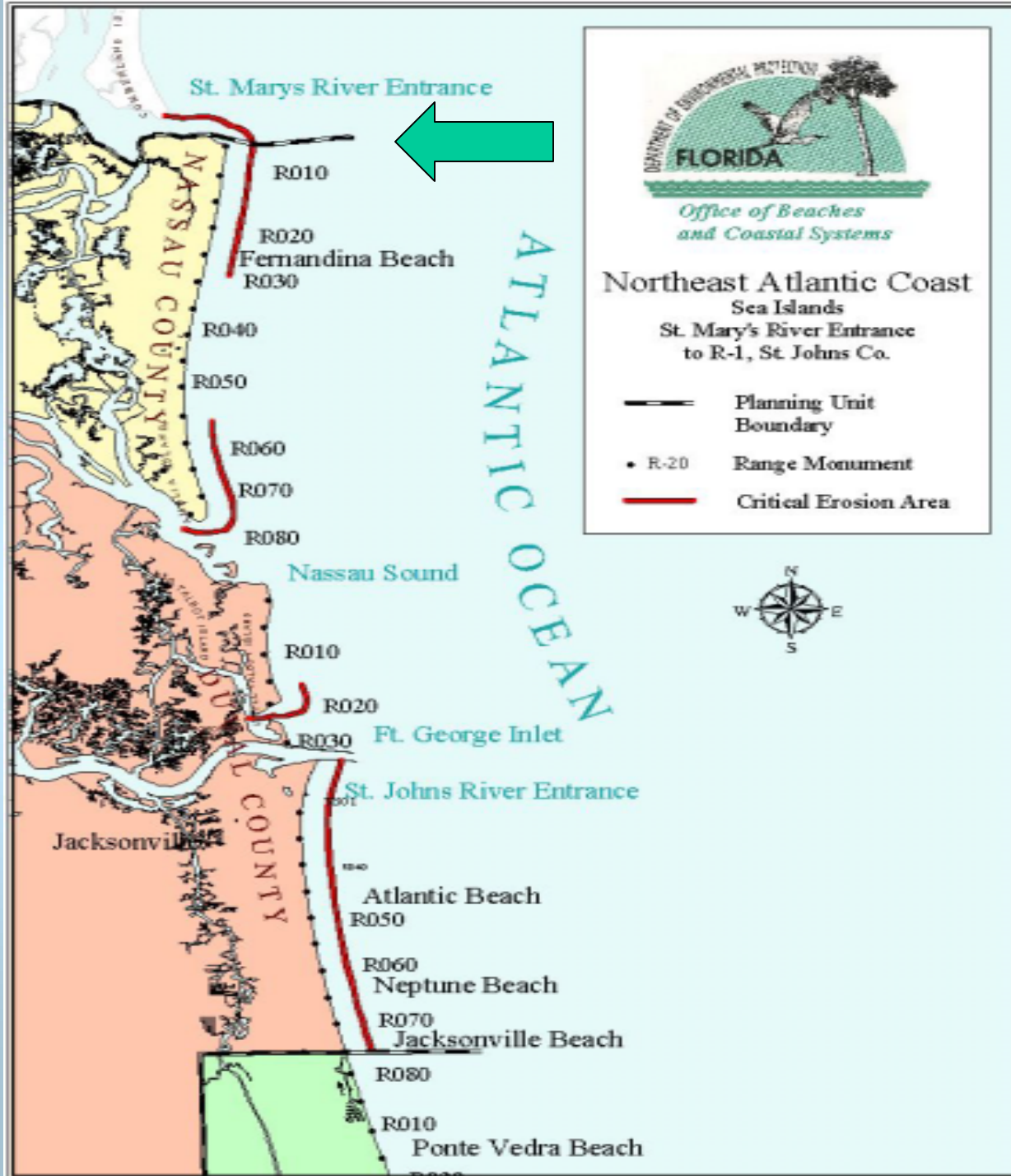
- ◆ Broad Agency Announcement for Designs
- ◆ Coordinating with Stakeholders

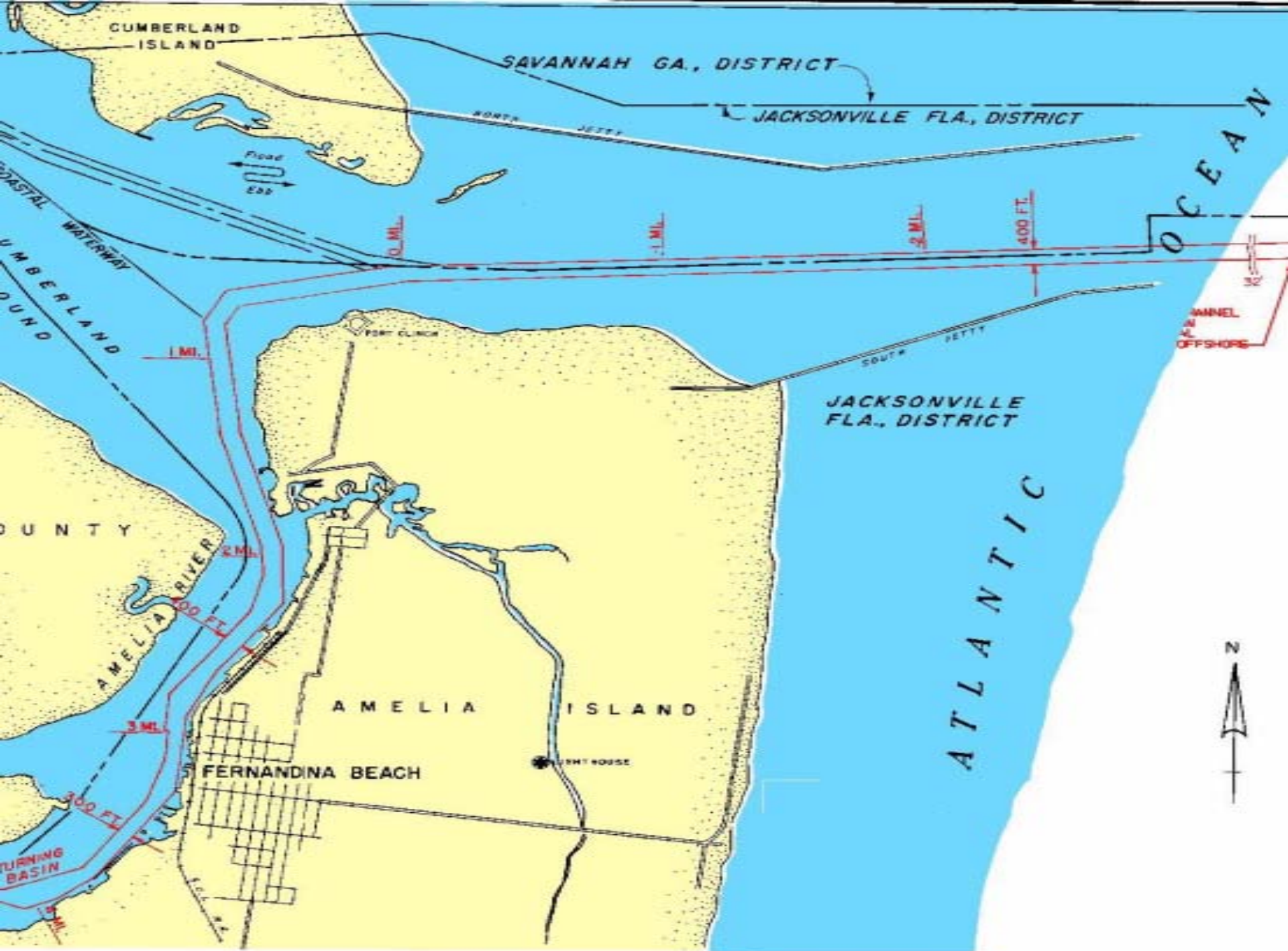
RSM PROGRAM NOTES

- **LESSONS LEARNED:**
 - ◆ **Industry not always Receptive to Needs**
 - ◆ **R&D Contract Capabilities Limited to Laboratories**
- **PROBLEMS ENCOUNTERED:**
 - ◆ **PUNaise not Currently Available in USA.**
 - ◆ **Districts Not Allowed to Issue an RFP for R&D**
- **RECOMMENDATIONS:**
 - ◆ **Proceed under Section 227 Program**
 - ◆ **Site of Interest: Miami Beach - 63rd Street Hot Spot**
- **PLAN FOR FY03:**
 - ◆ **Procure Innovative Designs for Miami Beach Hot Spot**
 - ◆ **Begin Construction**

**BYPASS SAND
AT
ST. MARYS RIVER ENTRANCE**

BYPASS SAND AT ST. MARYS ENTRANCE





RSM PROGRAM NOTES

- **LESSONS LEARNED:**

- ◆ **Updrift Interests Unconcerned about Bypassing Sand**
- ◆ **Stay Tuned for Future Developments**

- **PROBLEMS ENCOUNTERED:**

- ◆ **Interstate Perceptions/Perspectives**
- ◆ **National Parks Service Policy**

- **RECOMMENDATIONS:**

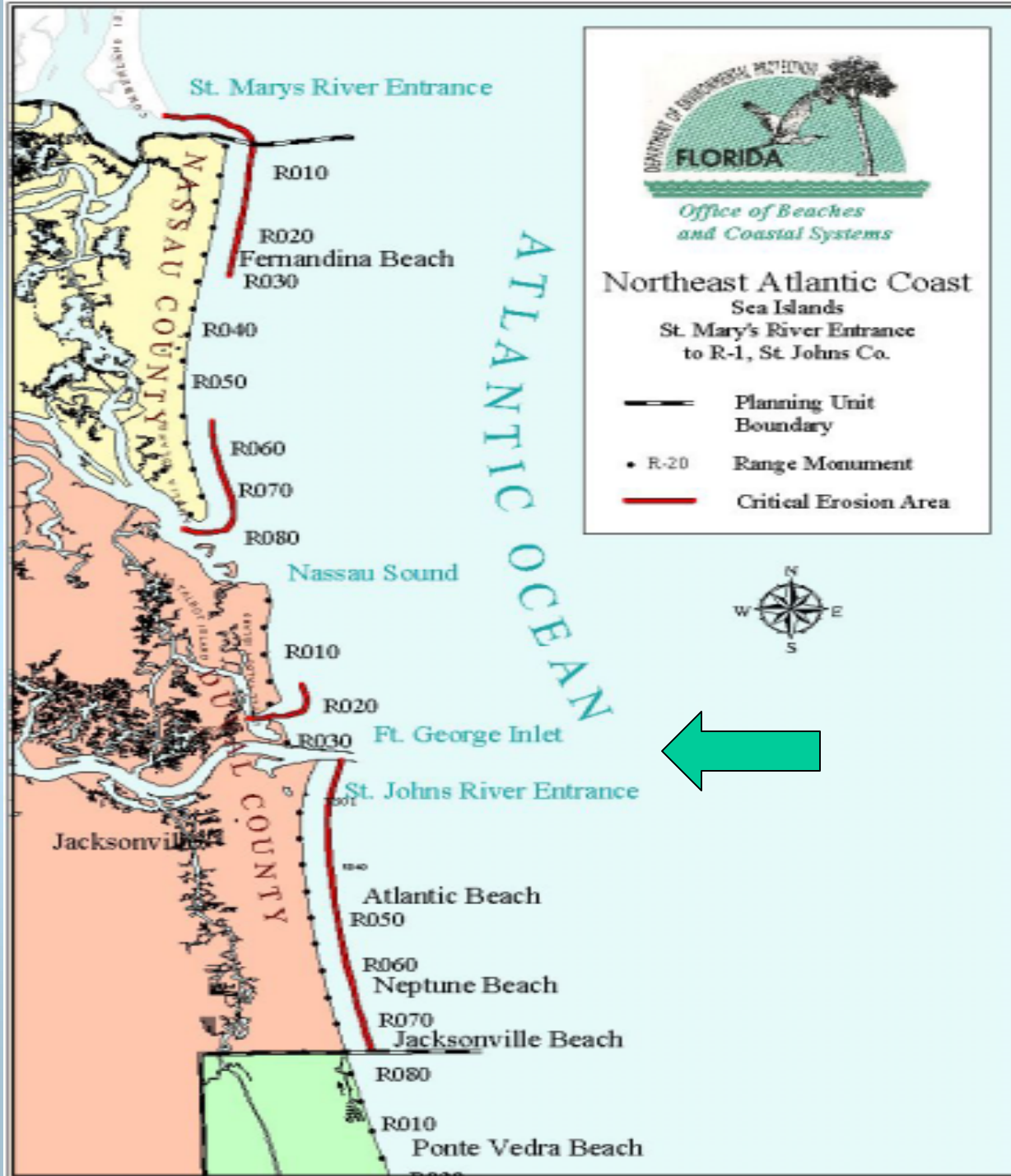
- ◆ **Look for Tradeoffs**
- ◆ **Too Early to Tell**

- **PLAN FOR FY03:**

- ◆ **Begin to Address the Issues**
- ◆ **Meet with Stakeholders**

**BYPASS/BACKPASS SAND
AT
FT. GEORGE AND ST. JOHNS
RIVER ENTRANCES**

BYPASS/BACKPASS SAND AT FT. GEORGE AND ST. JOHNS RIVER ENTRANCES



**TALLEYRAND
TERMINAL**

**38' FEDERAL
CHANNEL**

**Atlantic
Ocean**

Mile 14.7

**FORT
GEORGE
ISLAND**

**DAMES
POINT**

**BLOUNT
ISLAND**

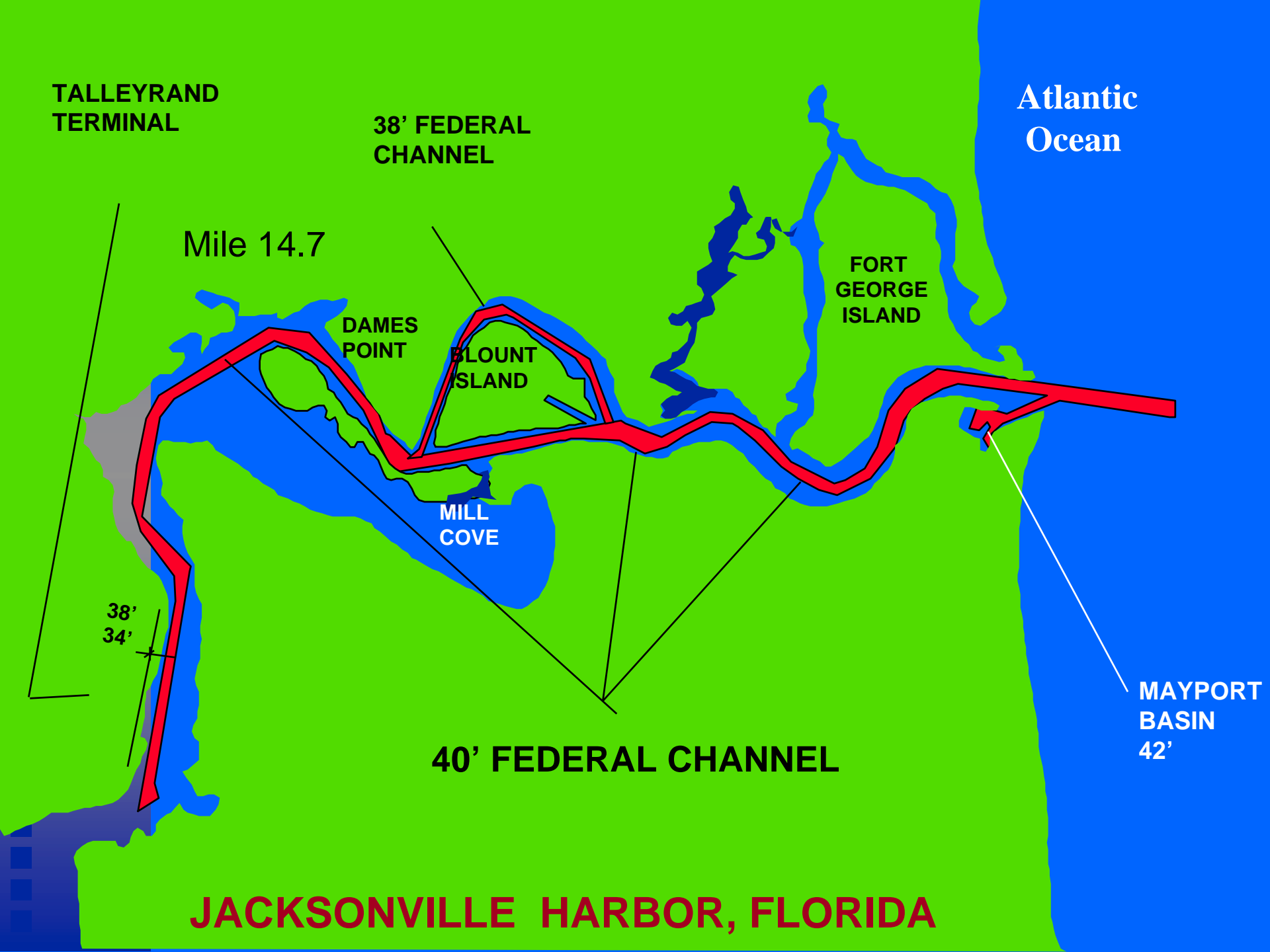
**MILL
COVE**

**38'
34'**

40' FEDERAL CHANNEL

**MAYPORT
BASIN
42'**

JACKSONVILLE HARBOR, FLORIDA





Sept. 16, 1999



April 12, 2002



April 12, 2002

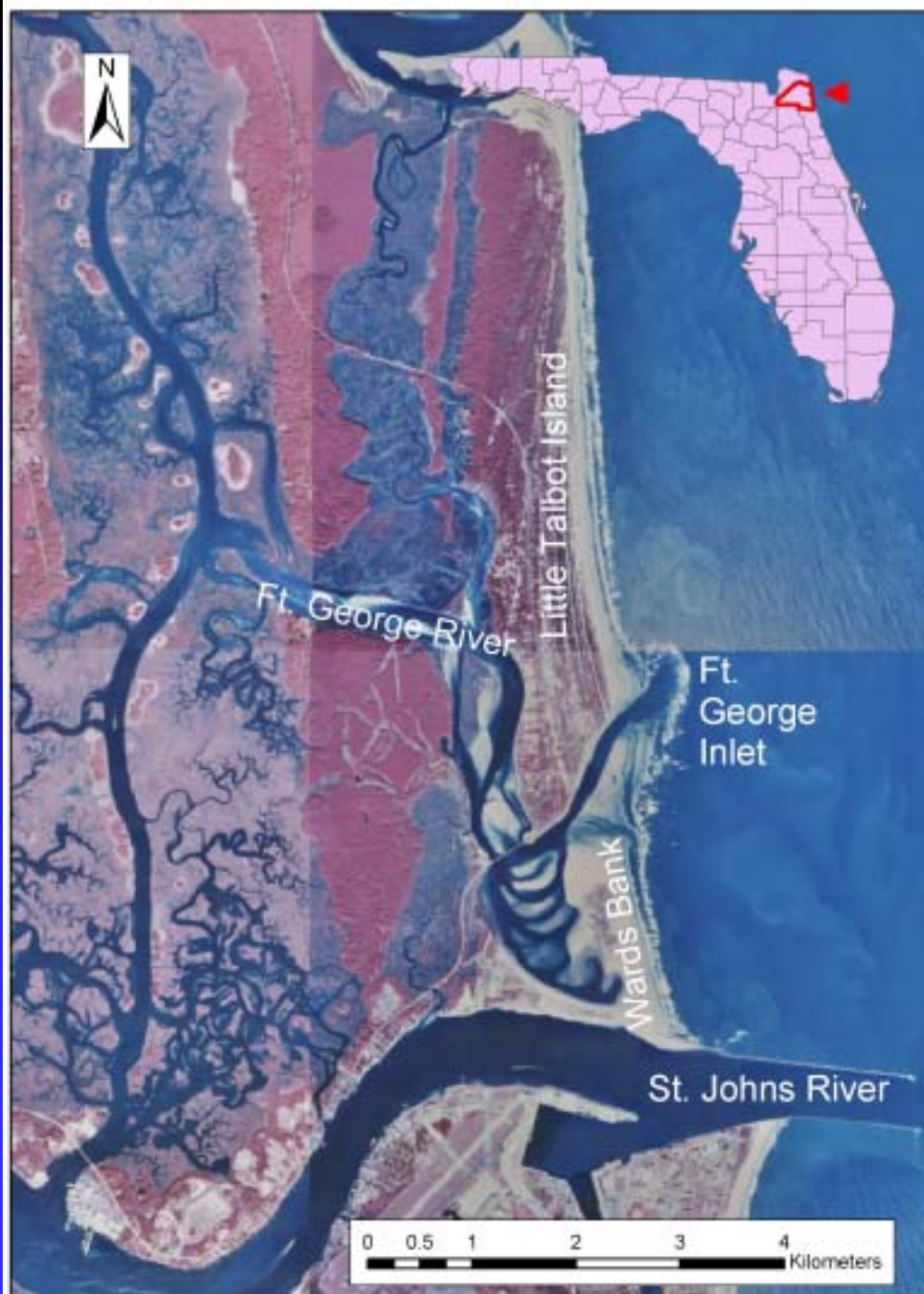
DIAGNOSTIC MODELING SYSTEM APPLICATION:

**Bypass/Backpass Sand at Ft. George
and St. Johns River Entrances**



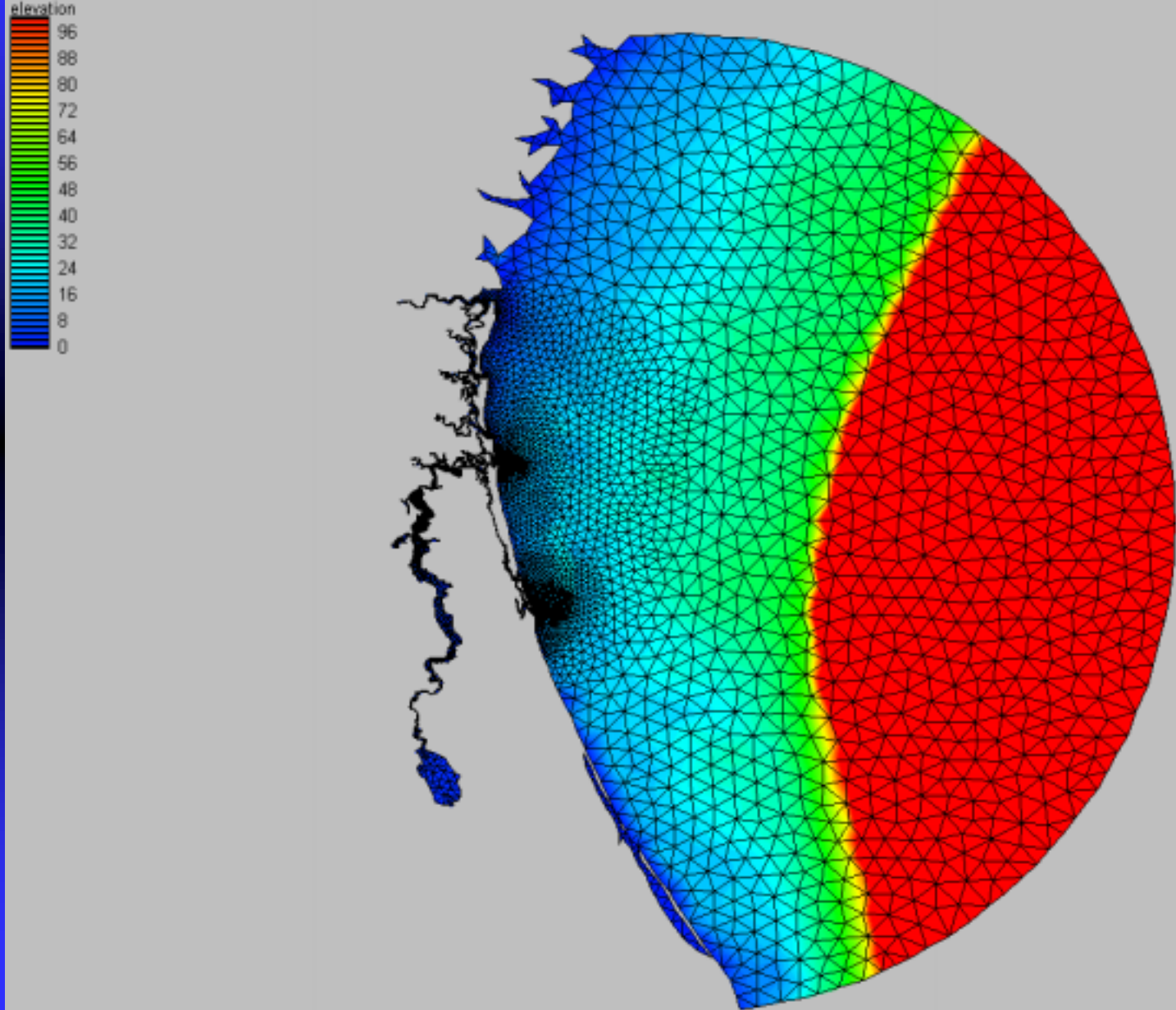
ALTERNATIVES EVALUATION

- Obtain Data
 - ◆ Survey (bathymetry, topography, high-water)
 - ◆ Calibration (WSE, velocities, wave)
- Model Existing Conditions
 - ◆ Waves
 - ◆ Tidal currents
- Evaluate Alternatives
 - ◆ Flood Shoal Removal
 - ◆ Channel Relocation
 - ◆ Deposition Basin Excavation



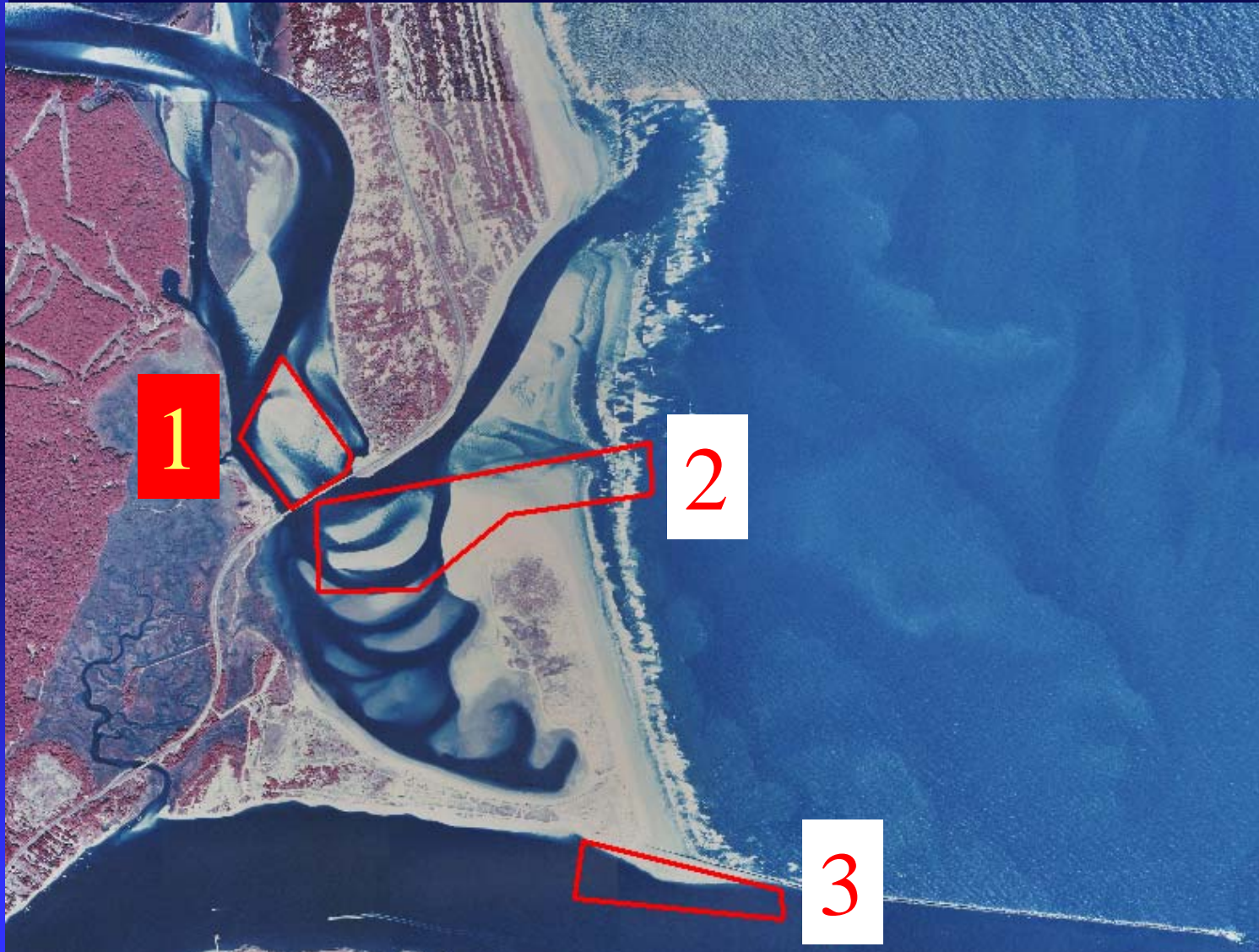


ADCIRC Model Domain





FLOOD SHOAL REMOVAL





FLOOD SHOAL REMOVAL

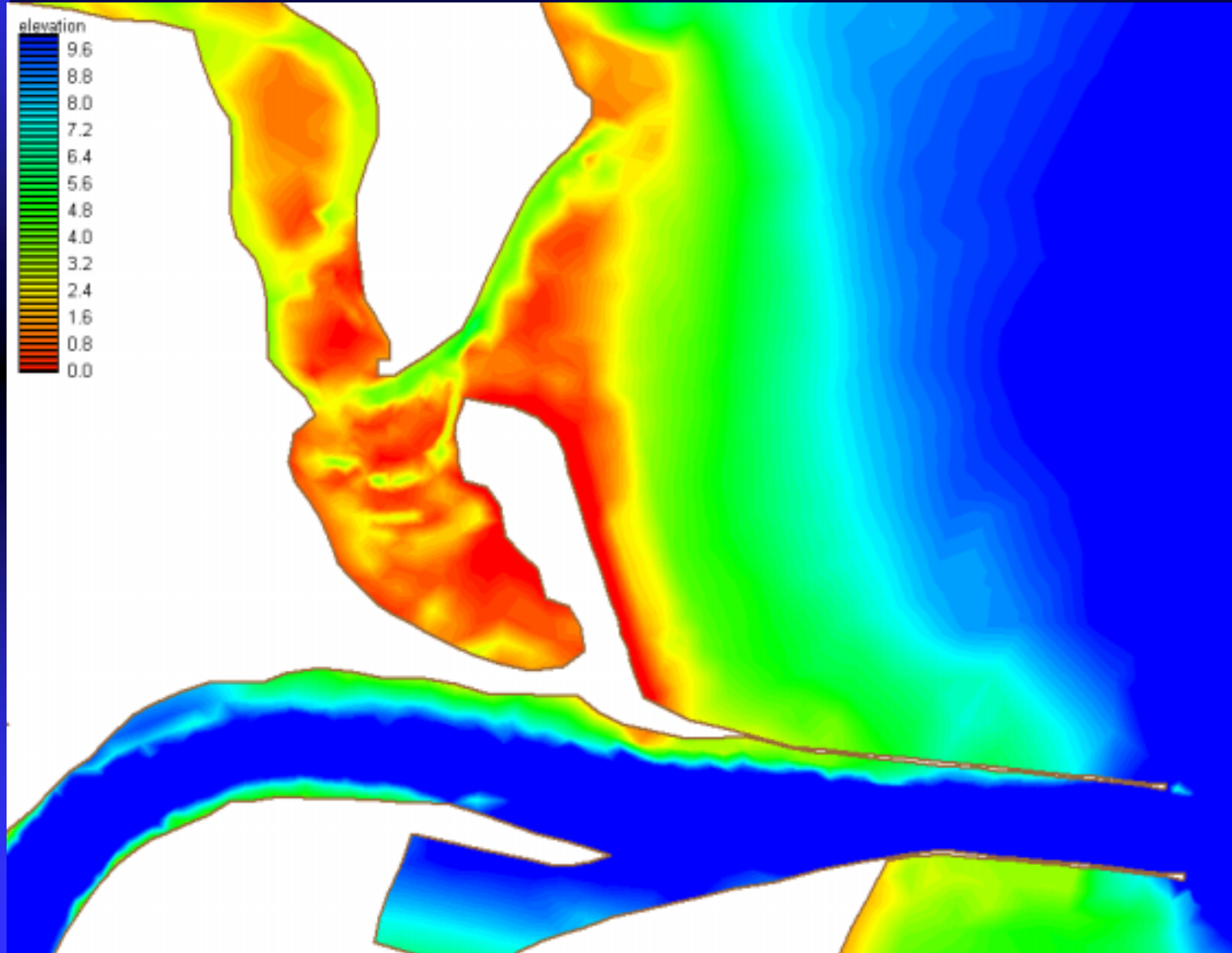


0 0.25 0.5 Miles

- Berm-break Survey
- Dredged Area (- 20 ft)
- As Built > 6 ft
- As Built < 6 ft

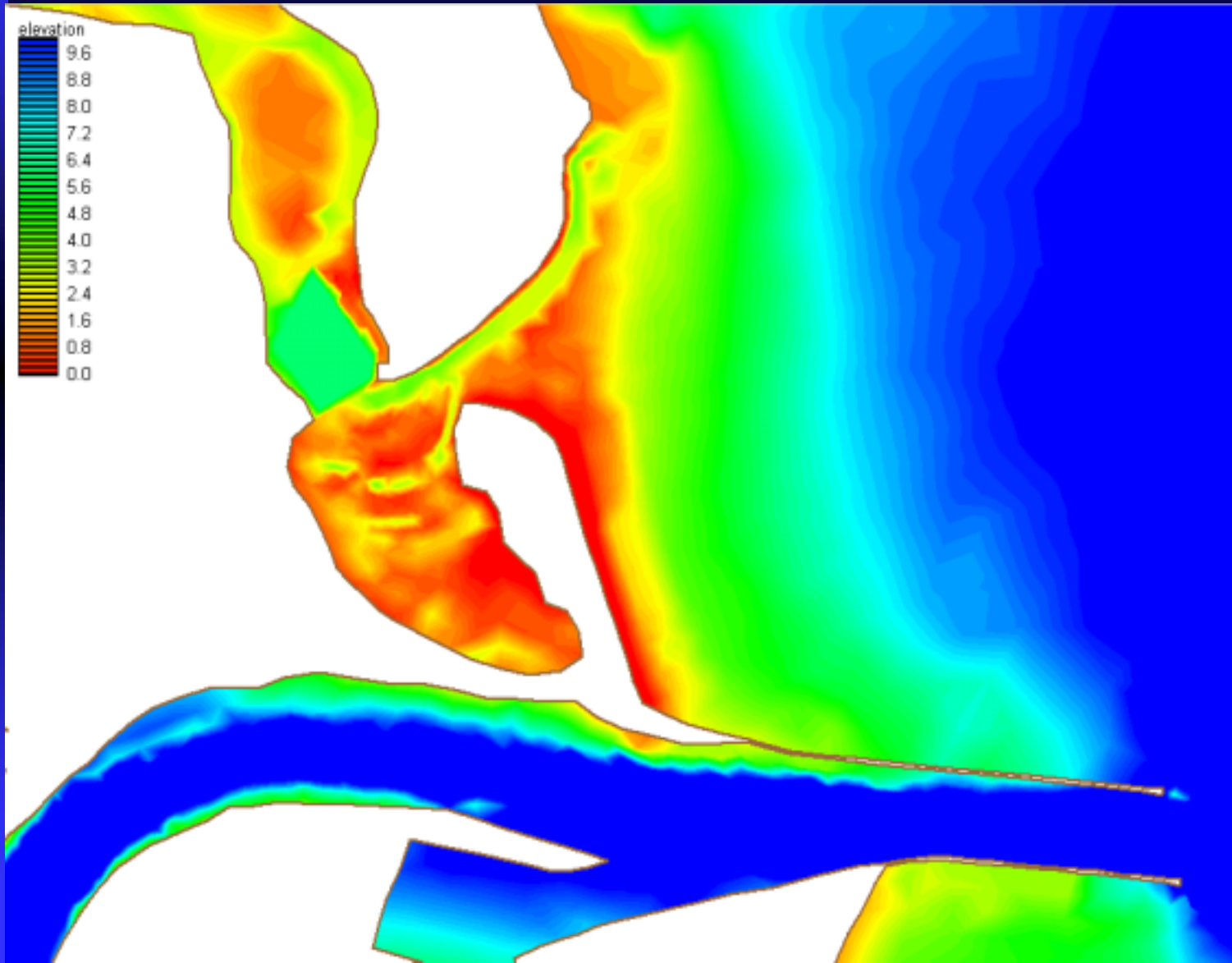


EXISTING BATHYMETRY



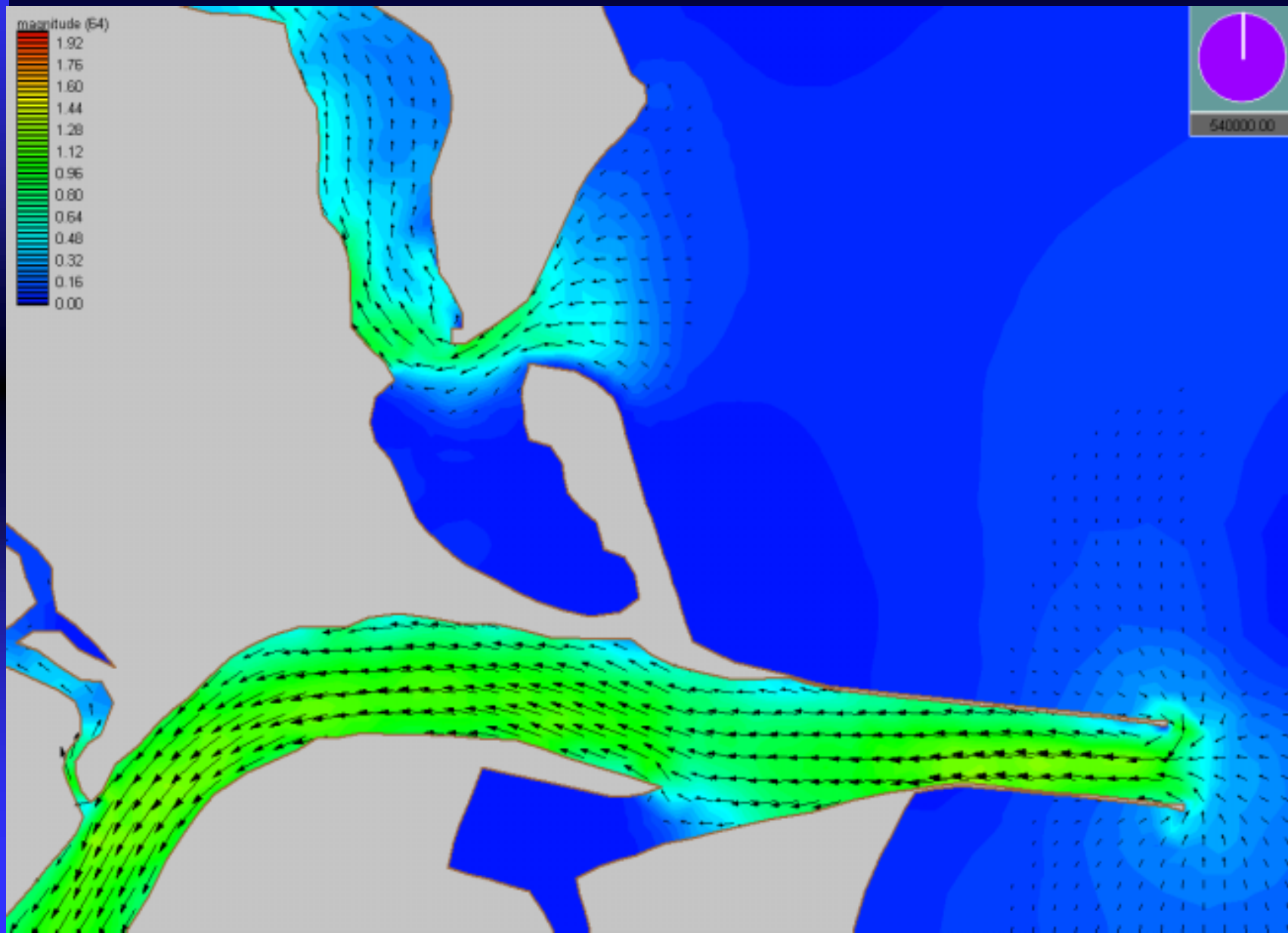


FLOOD SHOAL REMOVAL



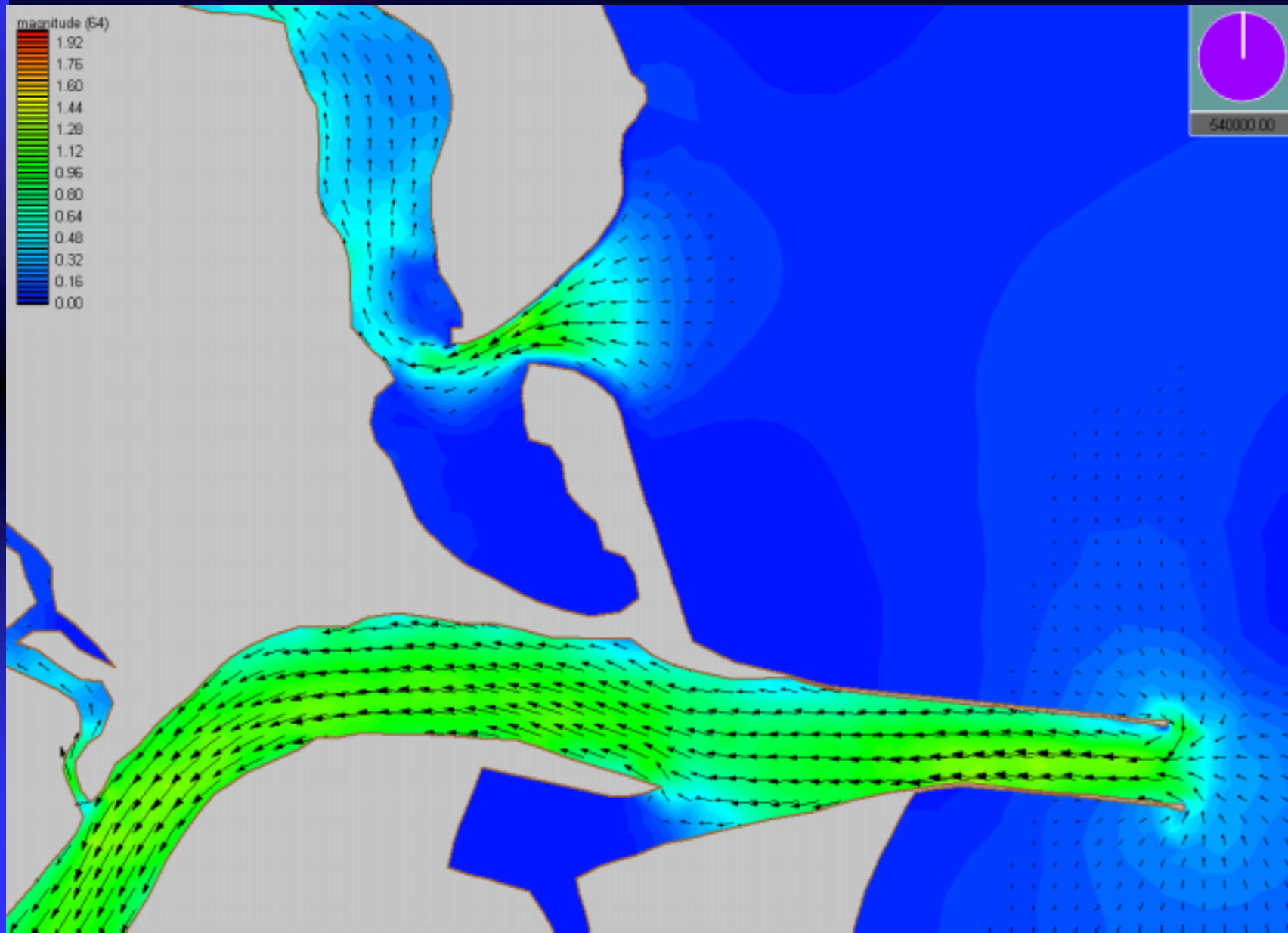


EXISTING TIDAL CIRCULATION



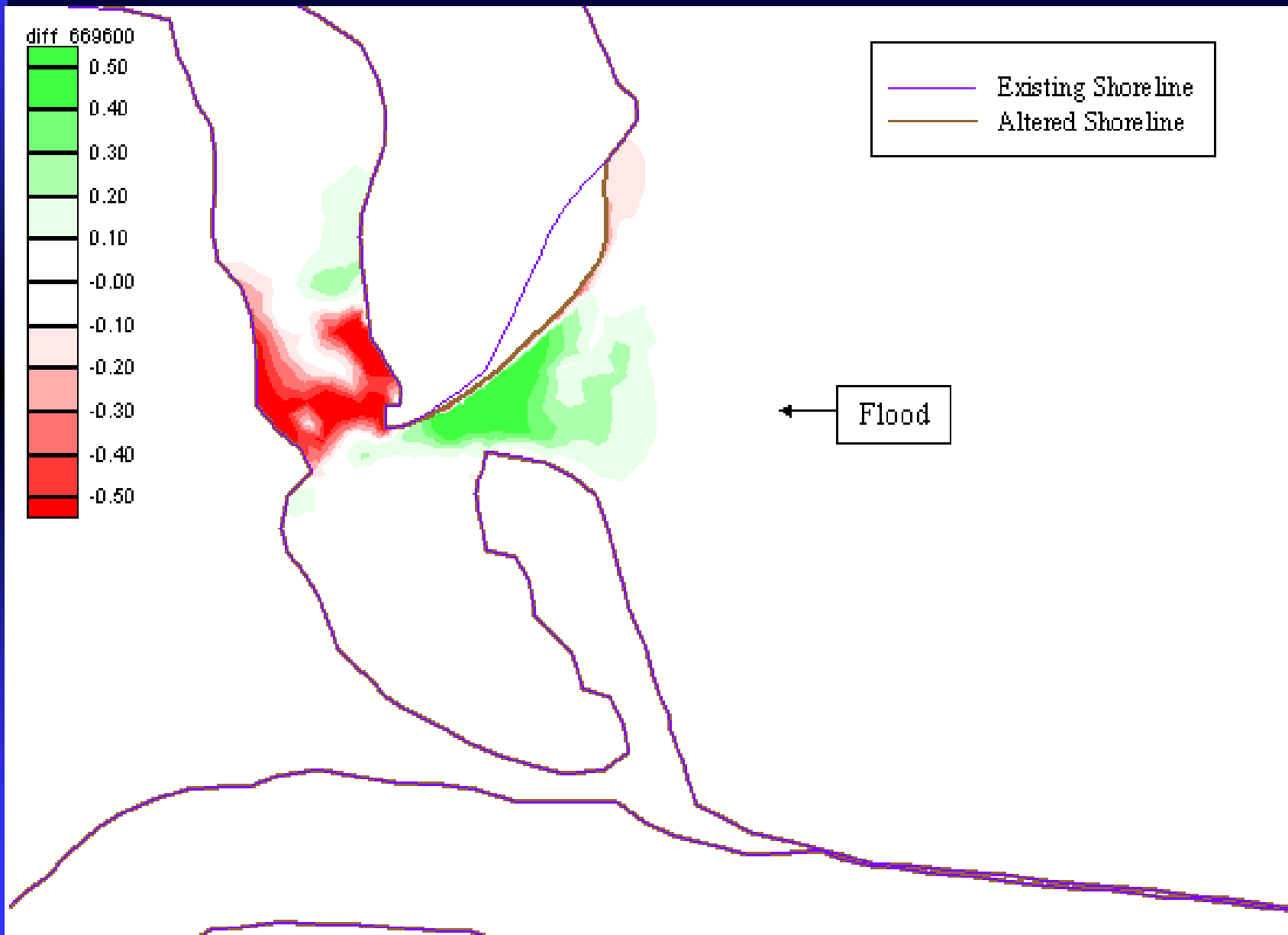


FLOOD SHOAL REMOVAL



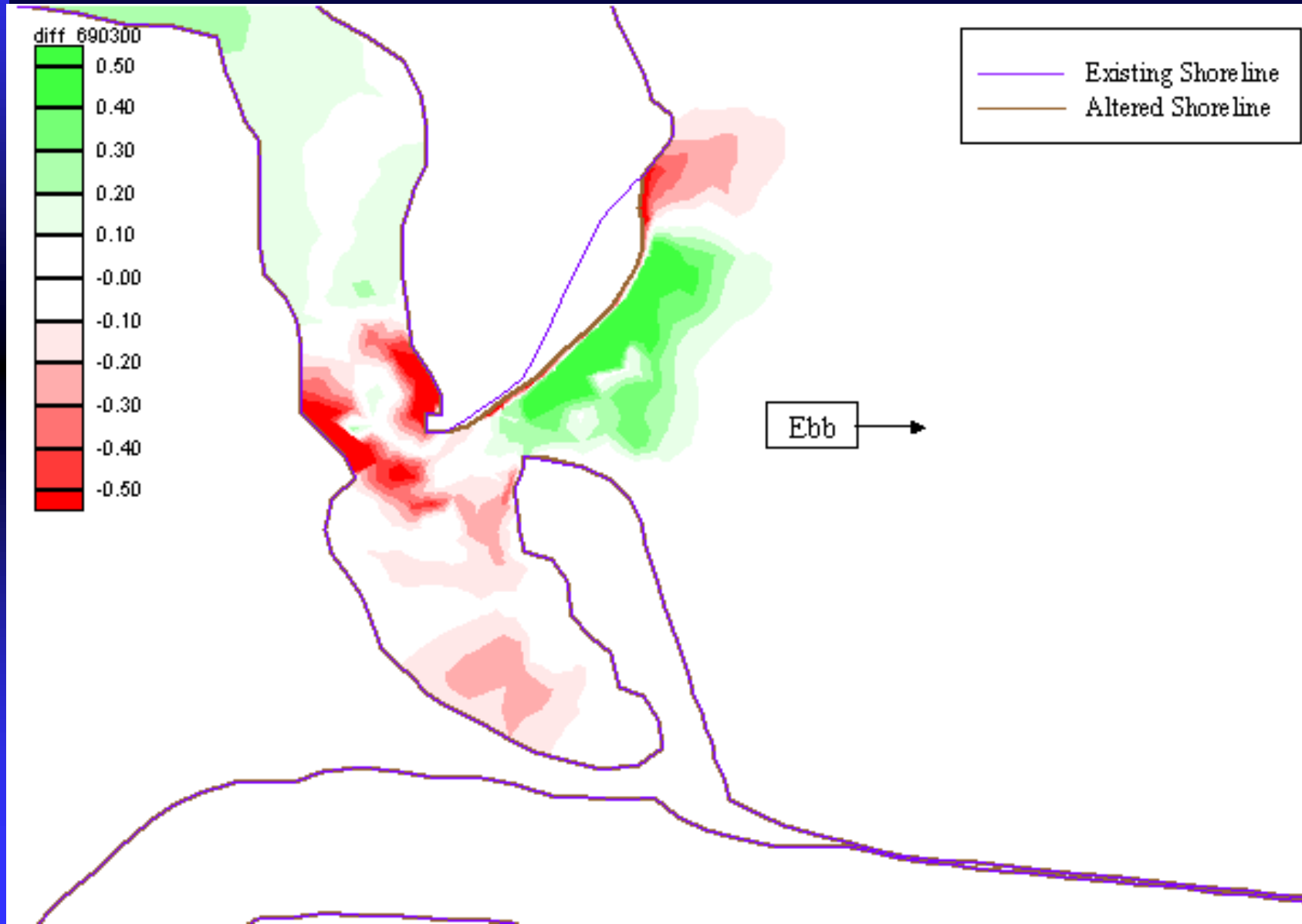


Difference (Spring Flood Tide)





Difference (Spring Ebb Tide)





CHANNEL RELOCATION



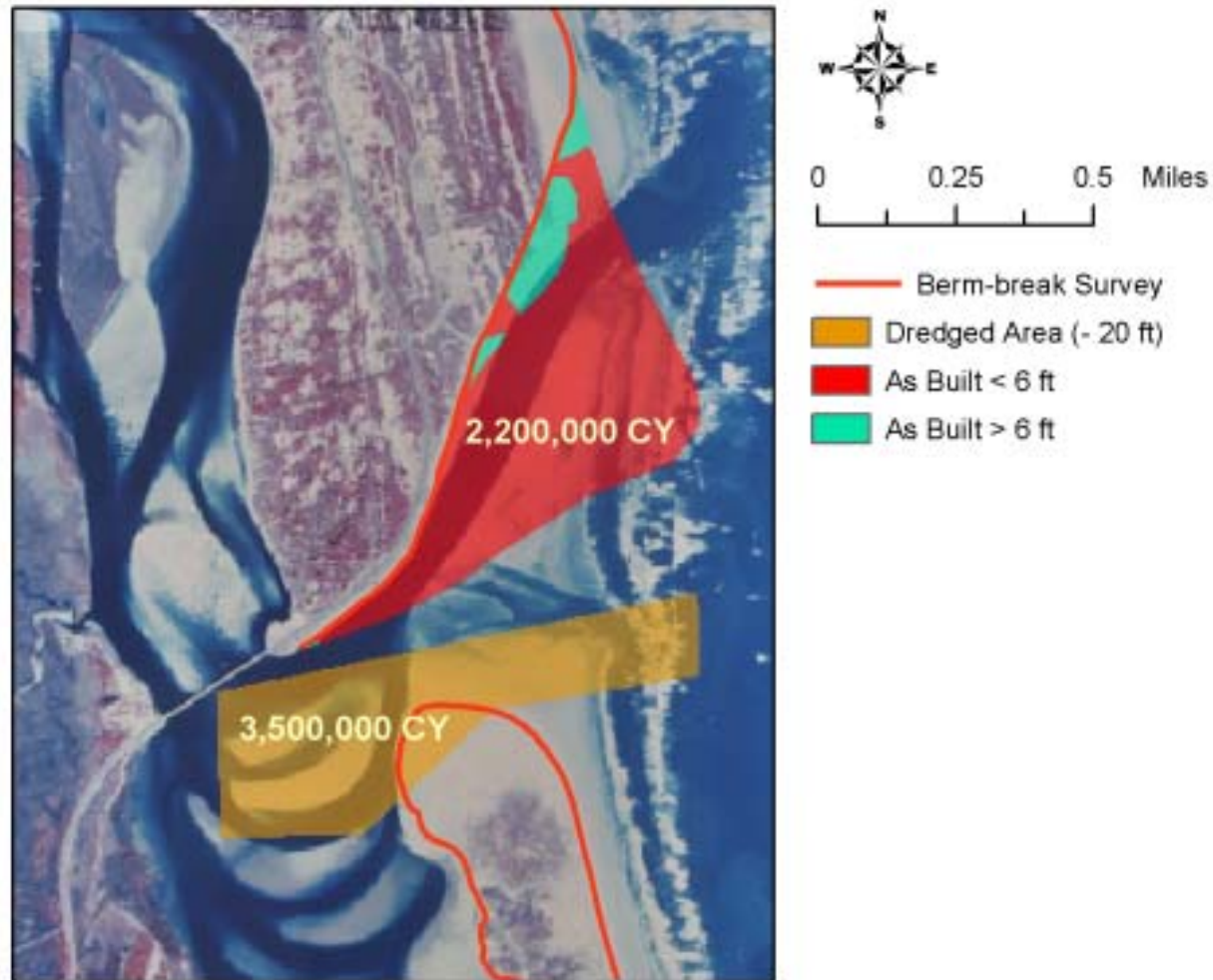


CBRA UNIT: PO2



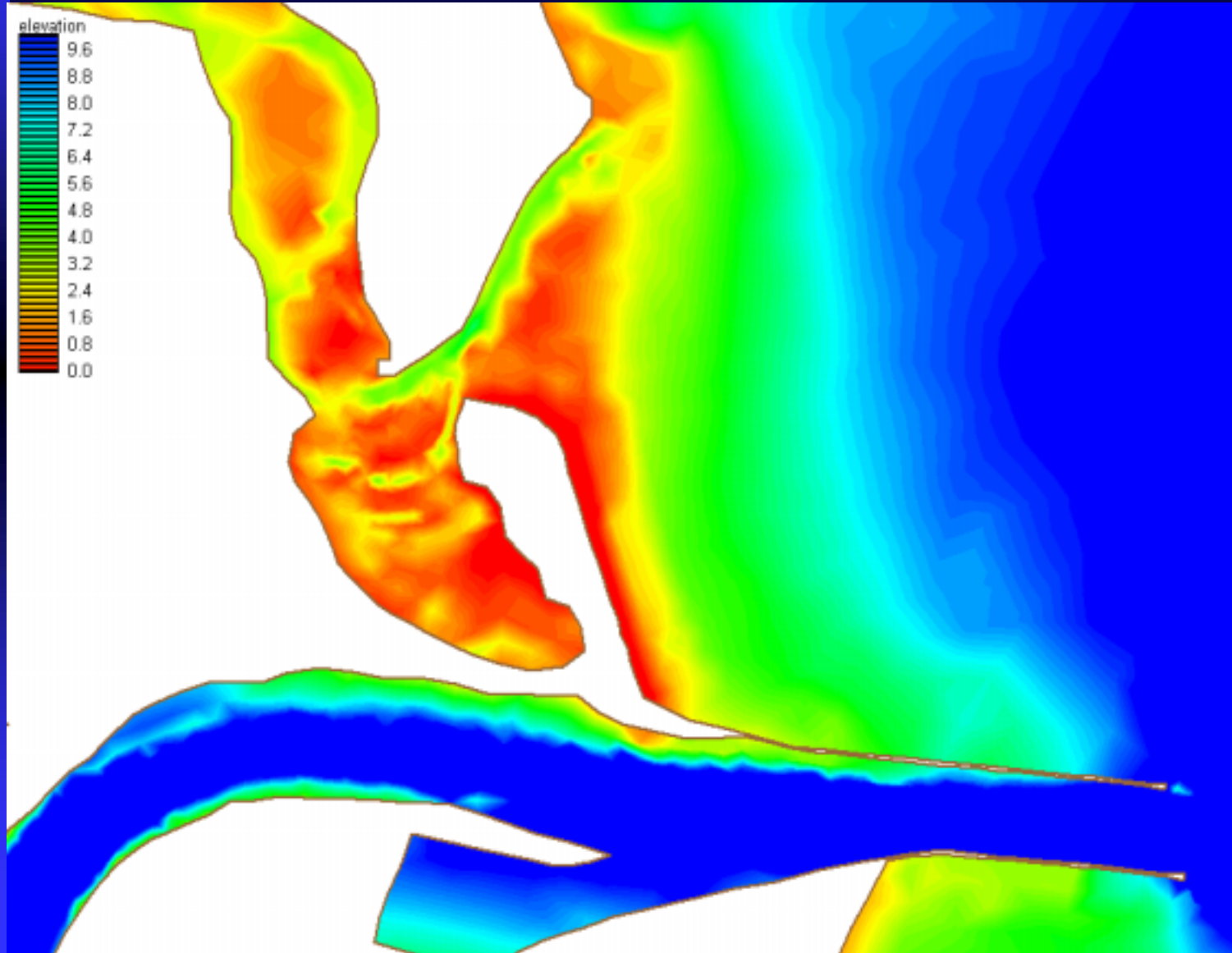


CHANNEL RELOCATION



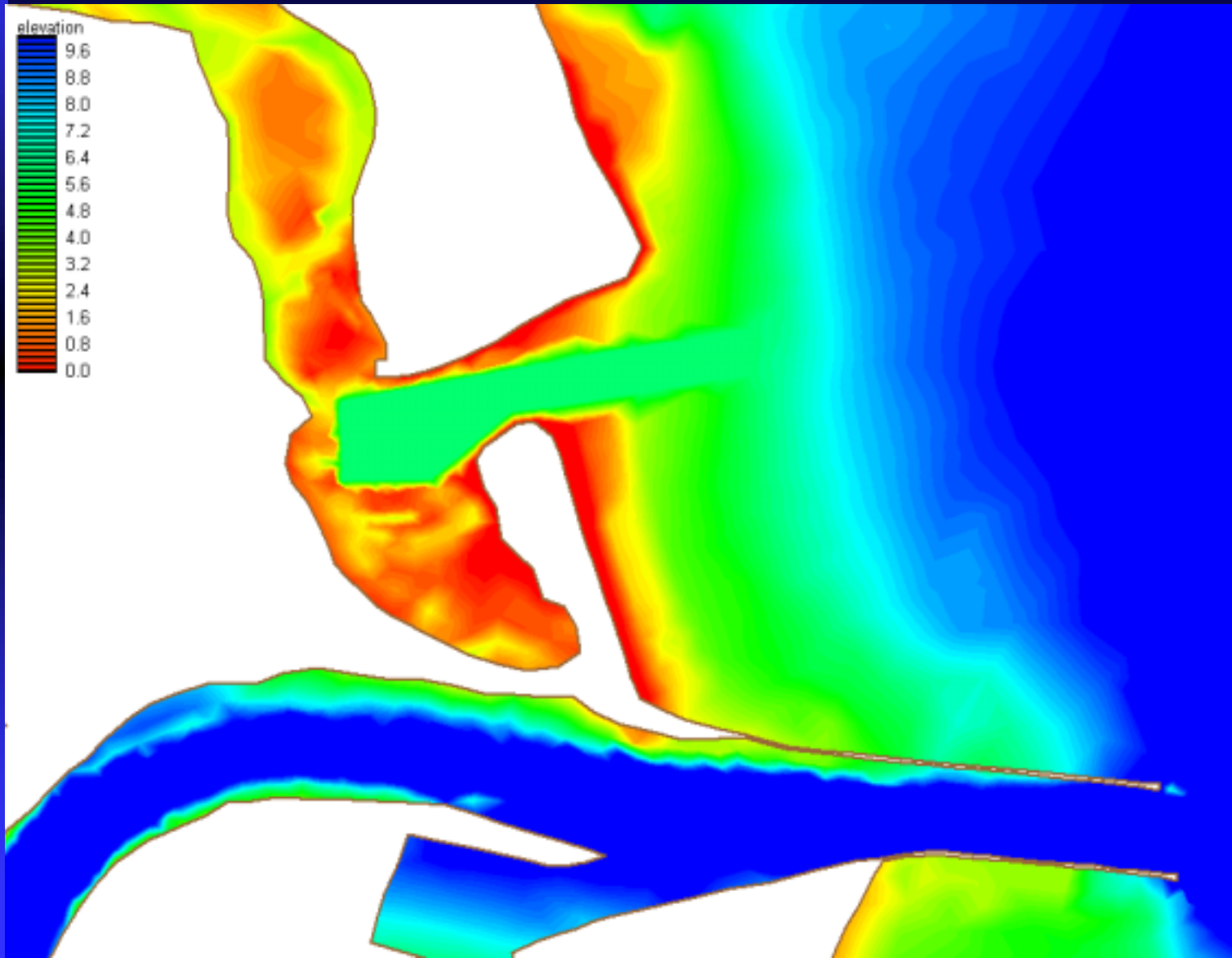


EXISTING BATHYMETRY



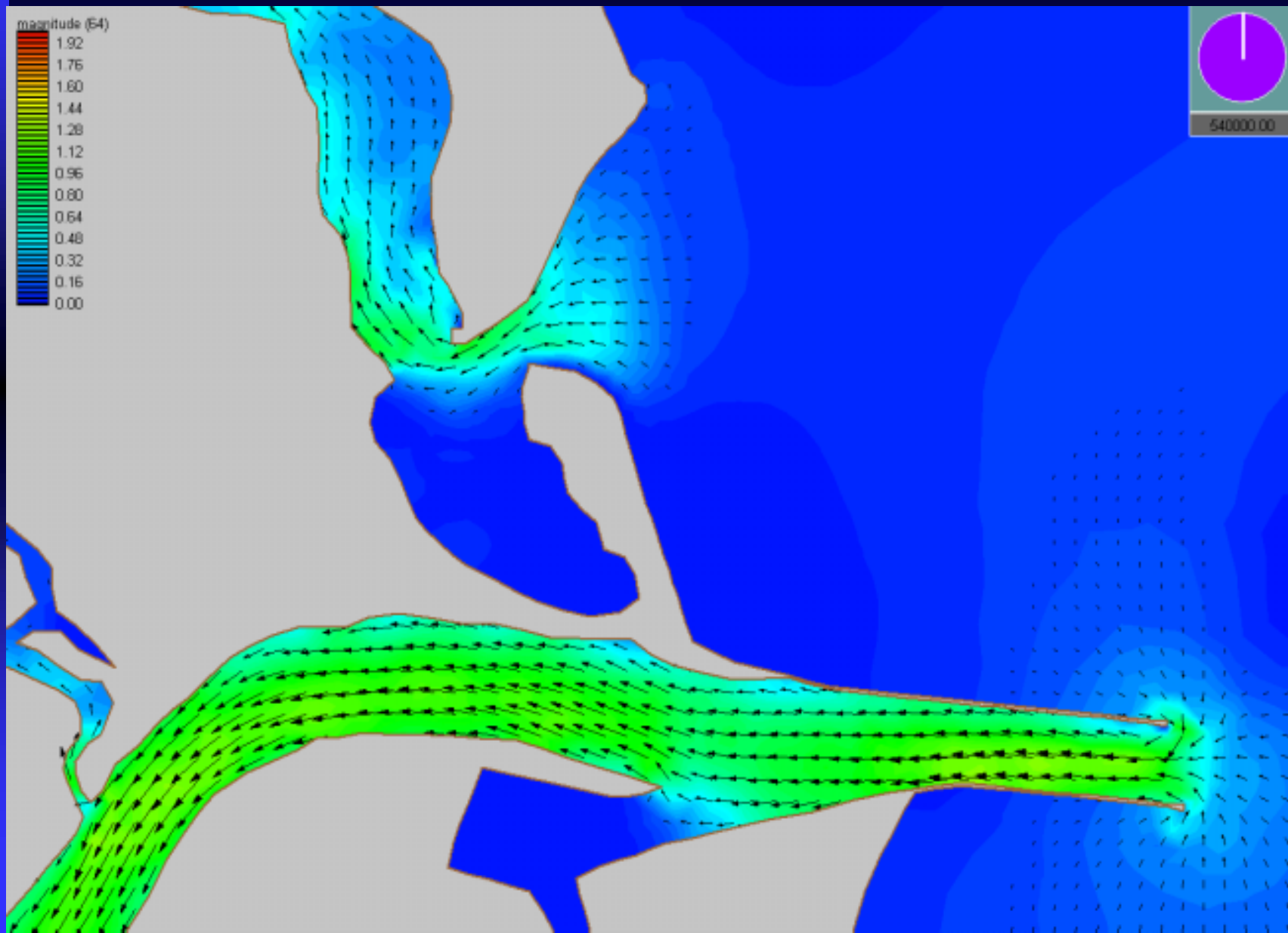


CHANNEL RELOCATION



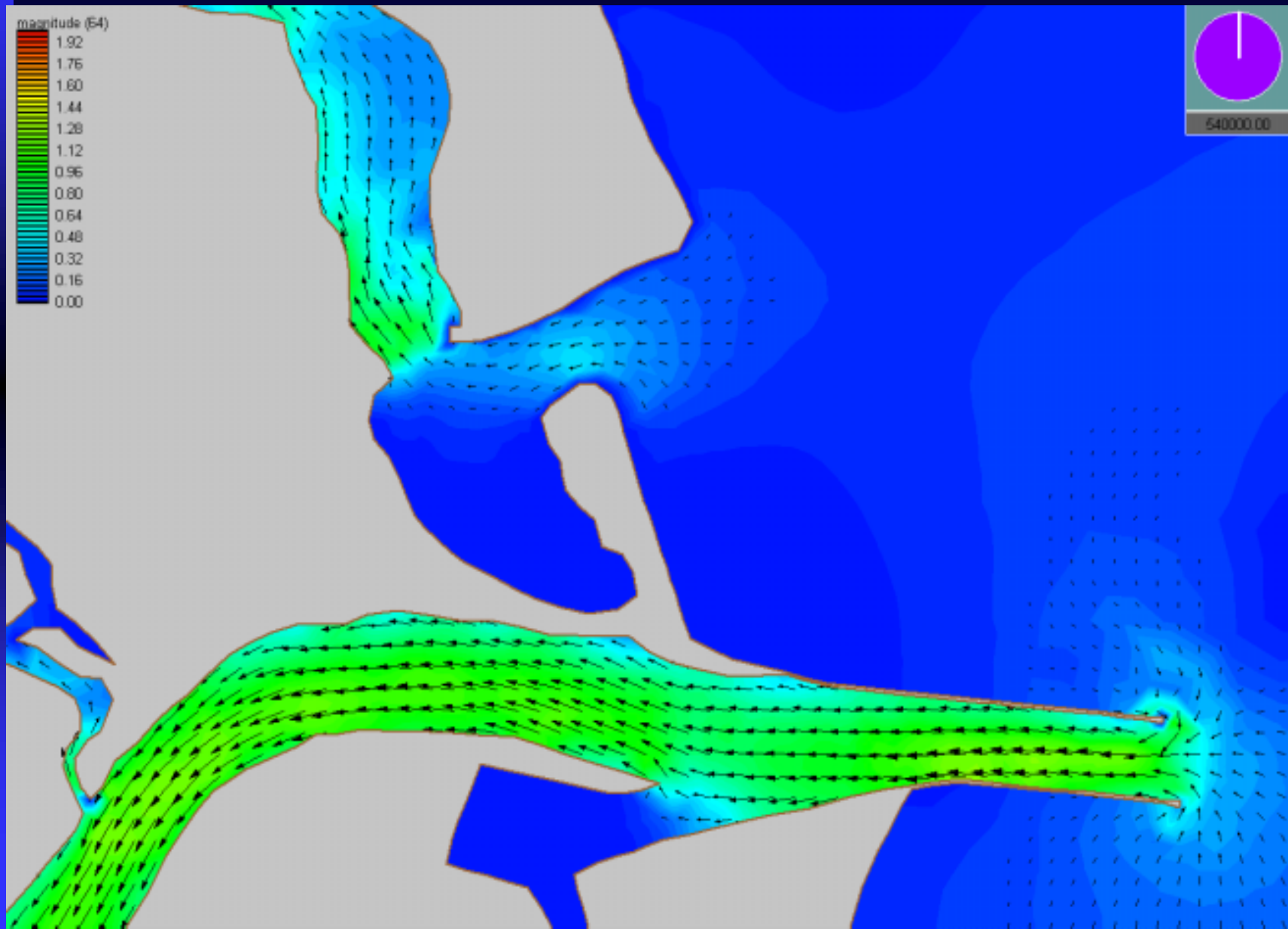


EXISTING TIDAL CIRCULATION



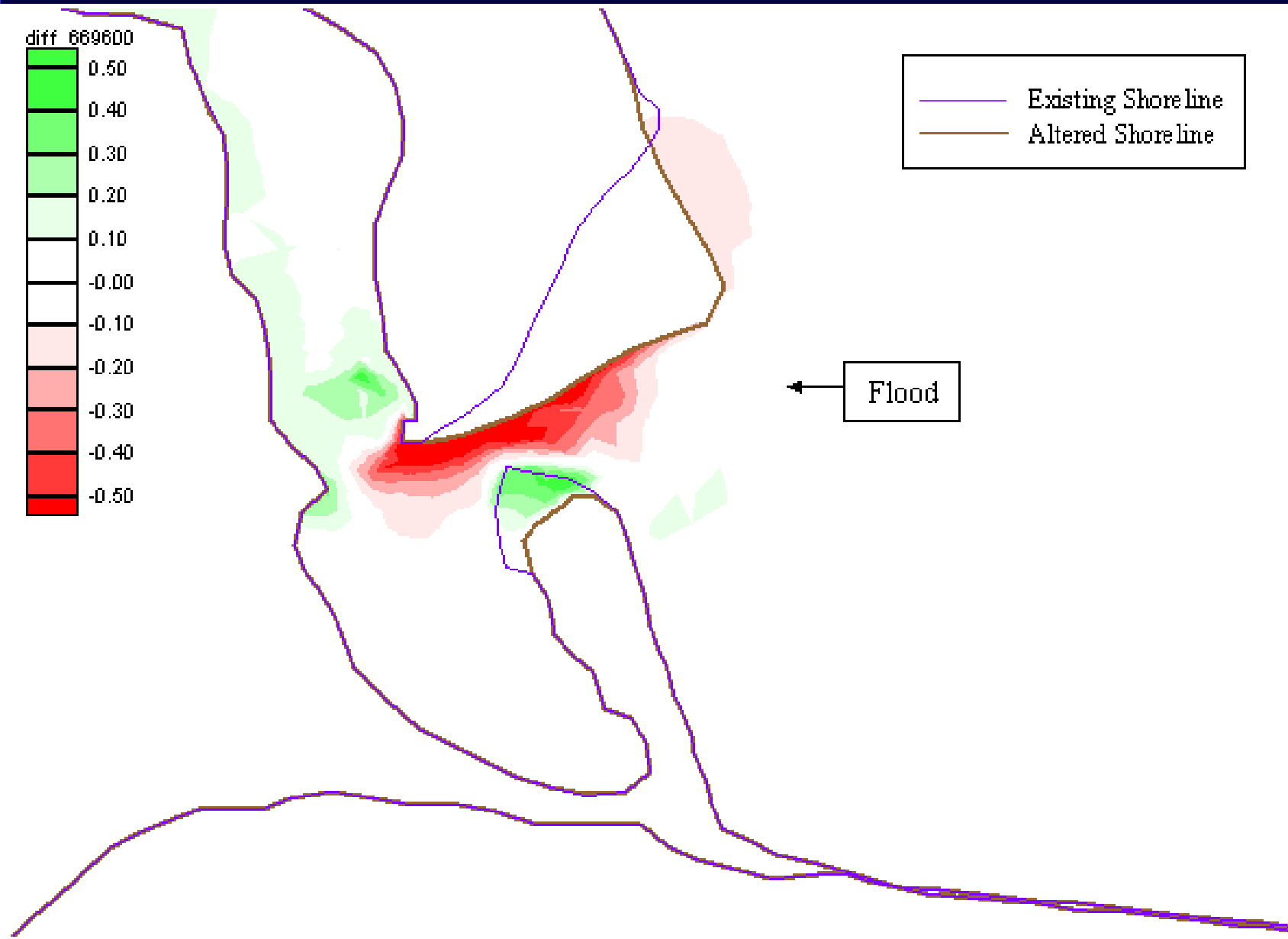


CHANNEL RELOCATION



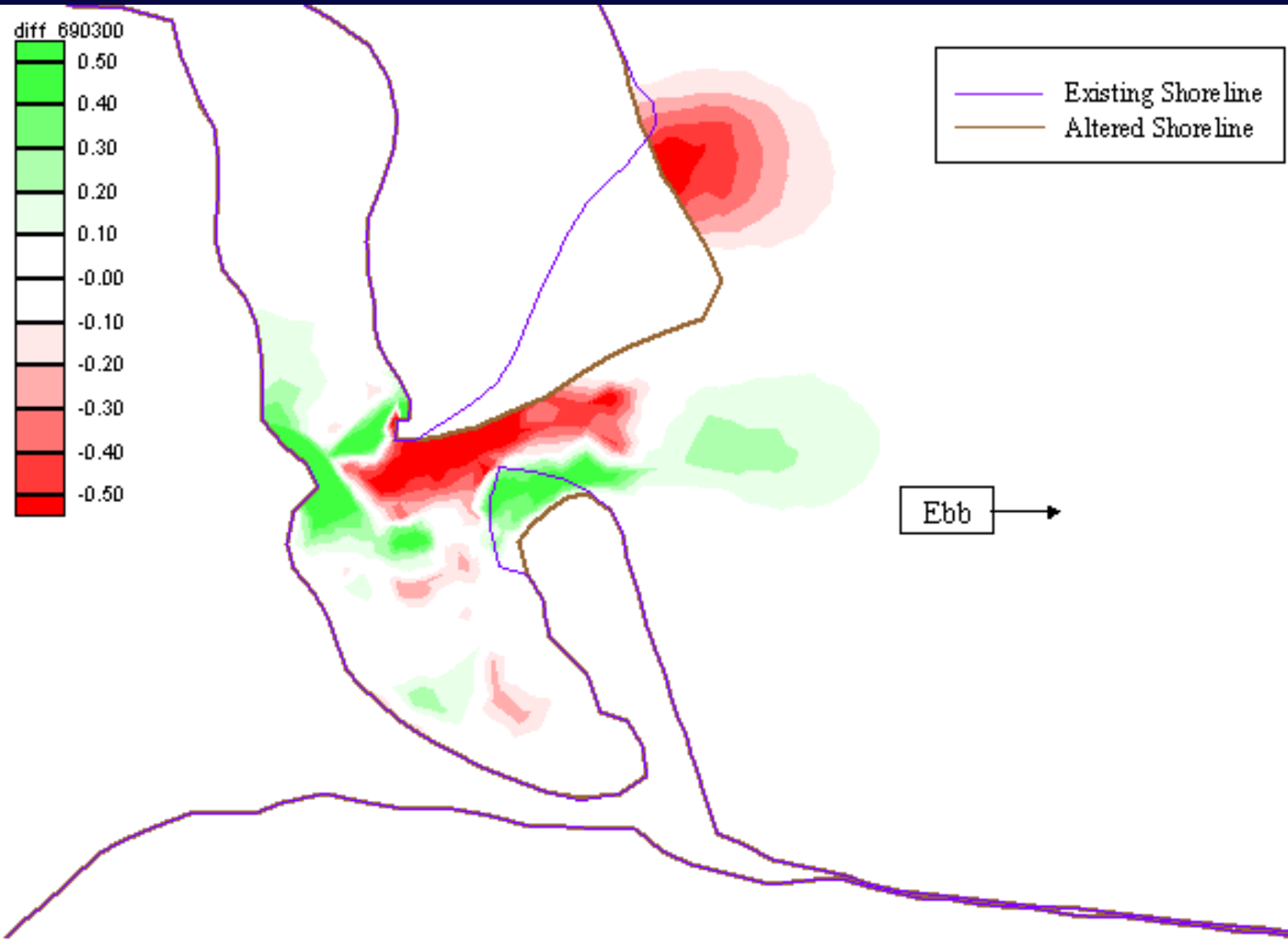


Difference (Spring Flood Tide)



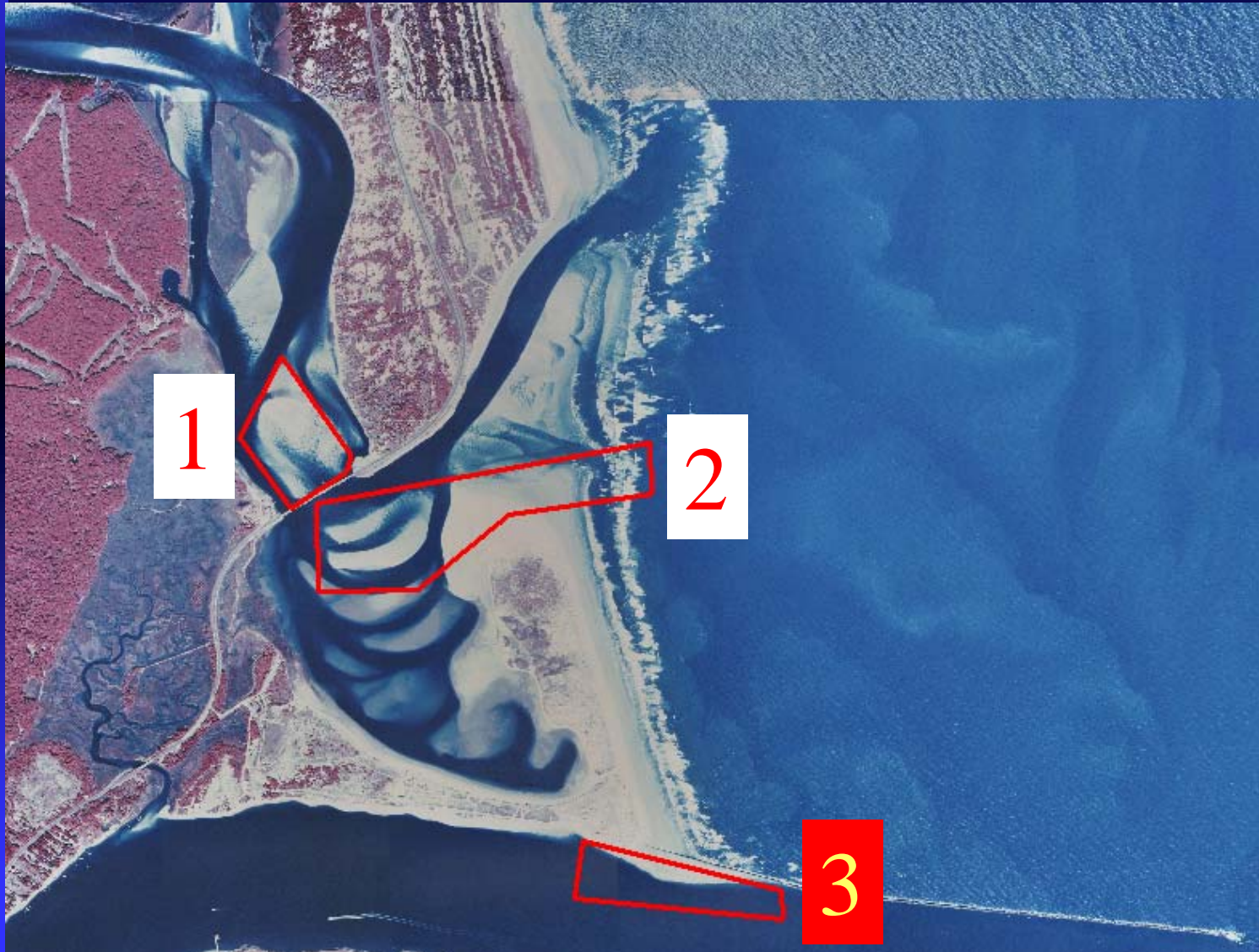


Difference (Spring Ebb Tide)



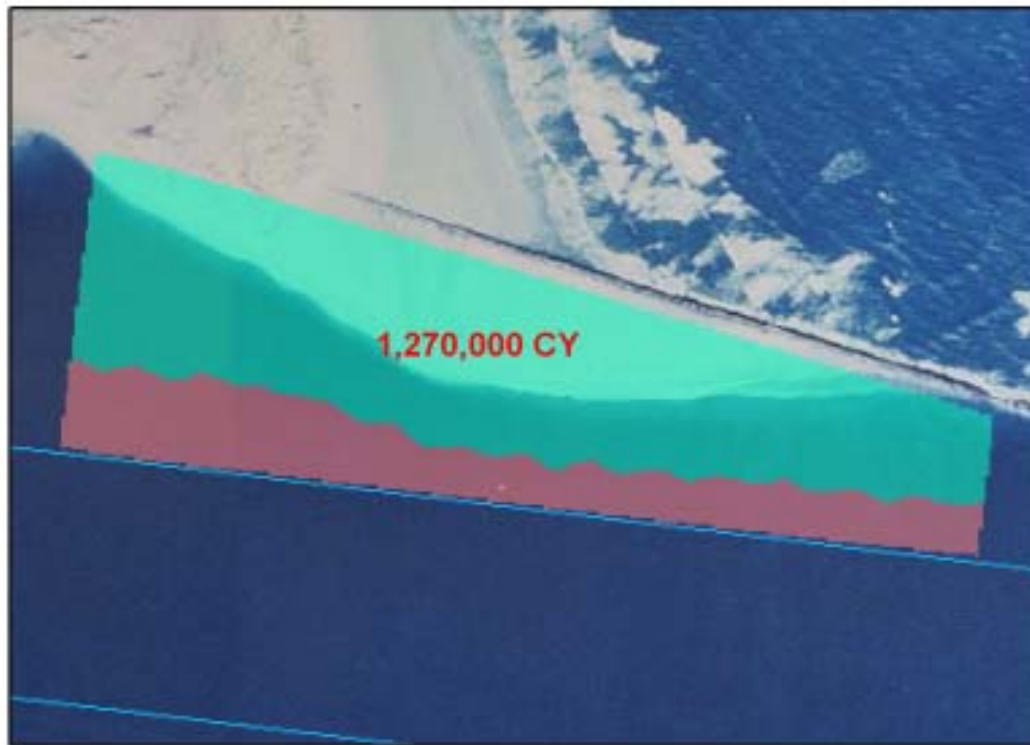


DEPOSITION BASIN EXCAVATION





DEPOSITION BASIN EXCAVATION

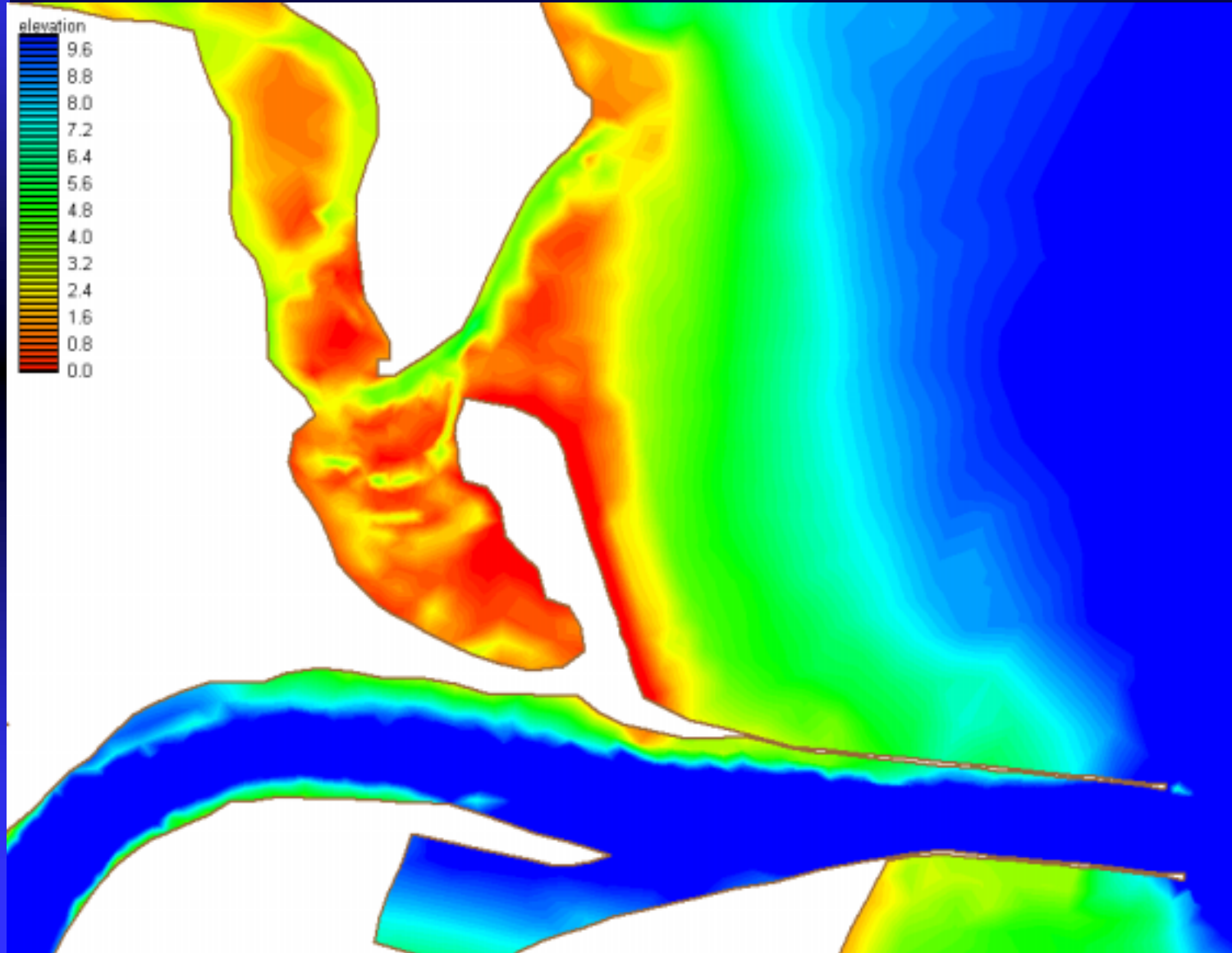


0 0.05 0.1 Miles

Dredged Area < - 30 ft
Dredged Area > - 30 ft

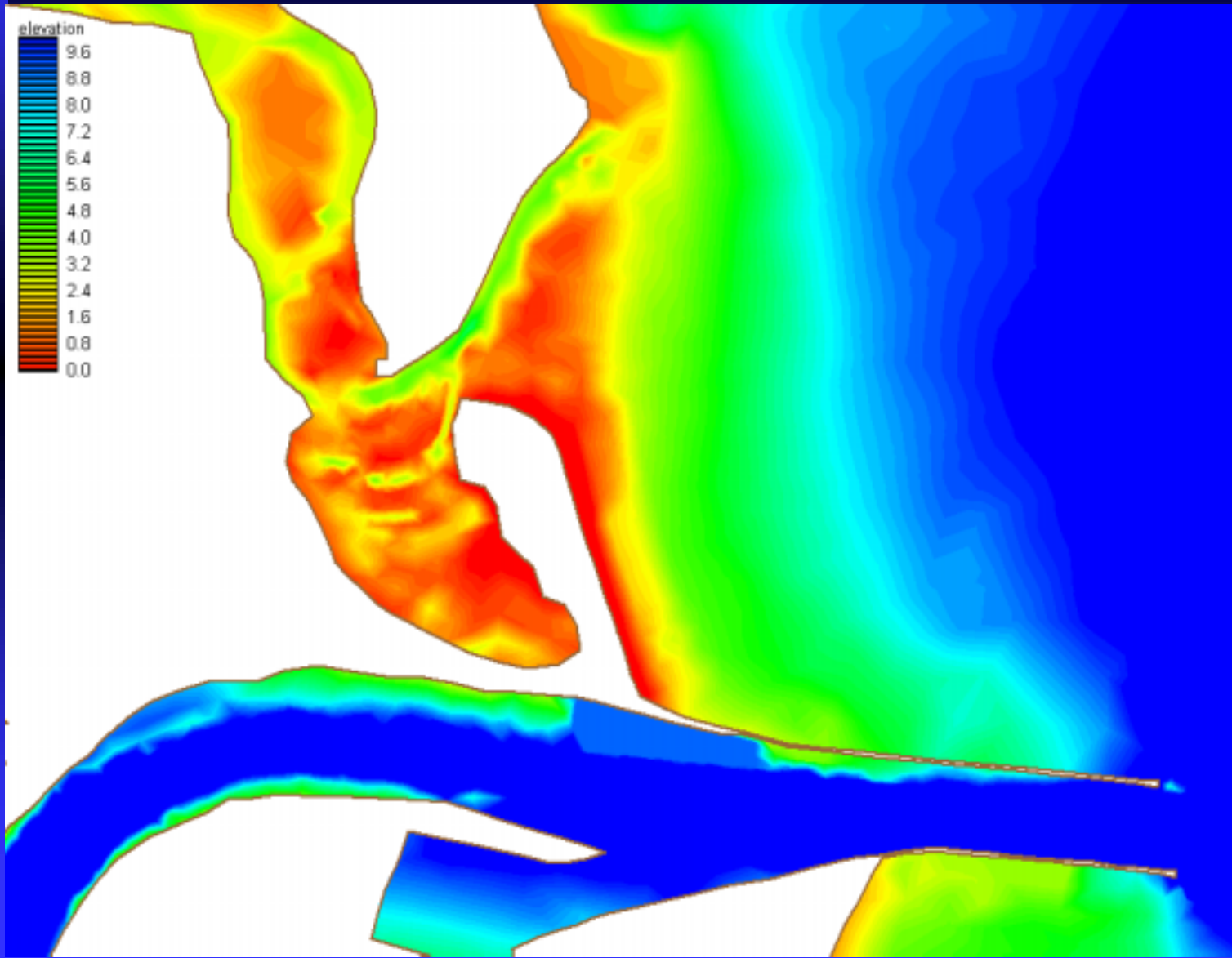


EXISTING BATHYMETRY



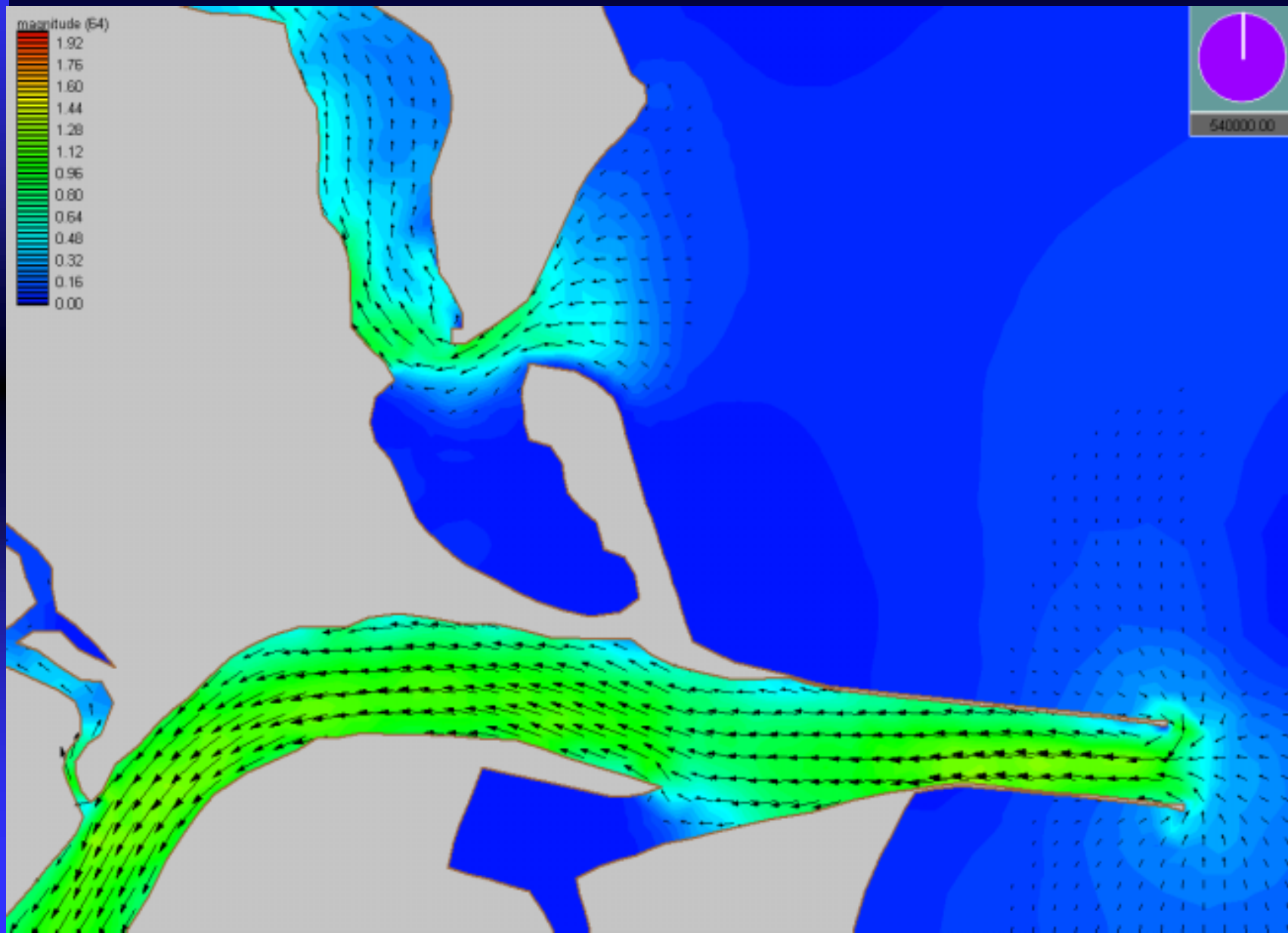


DEPOSITION BASIN EXCAVATION



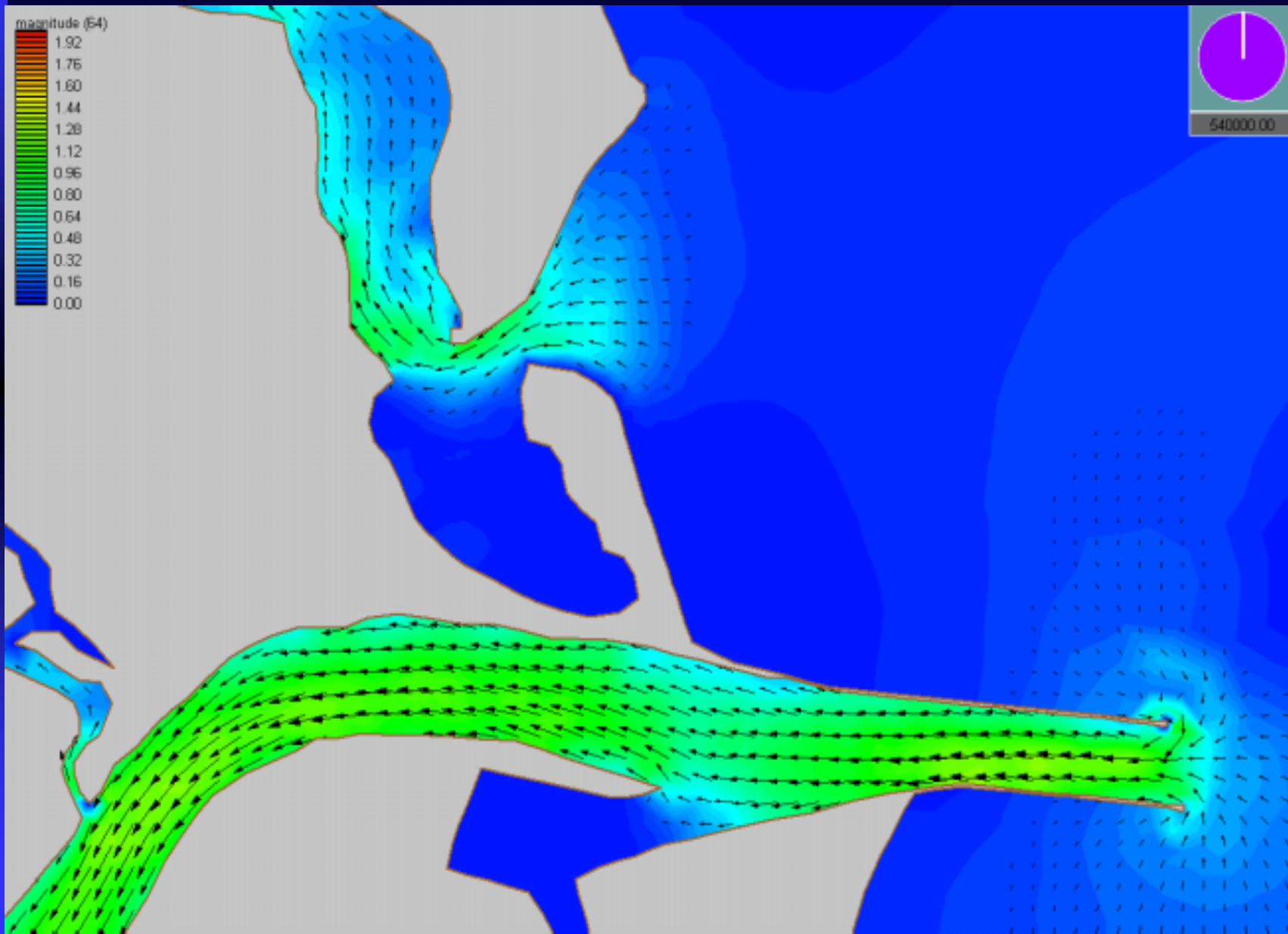


EXISTING TIDAL CIRCULATION



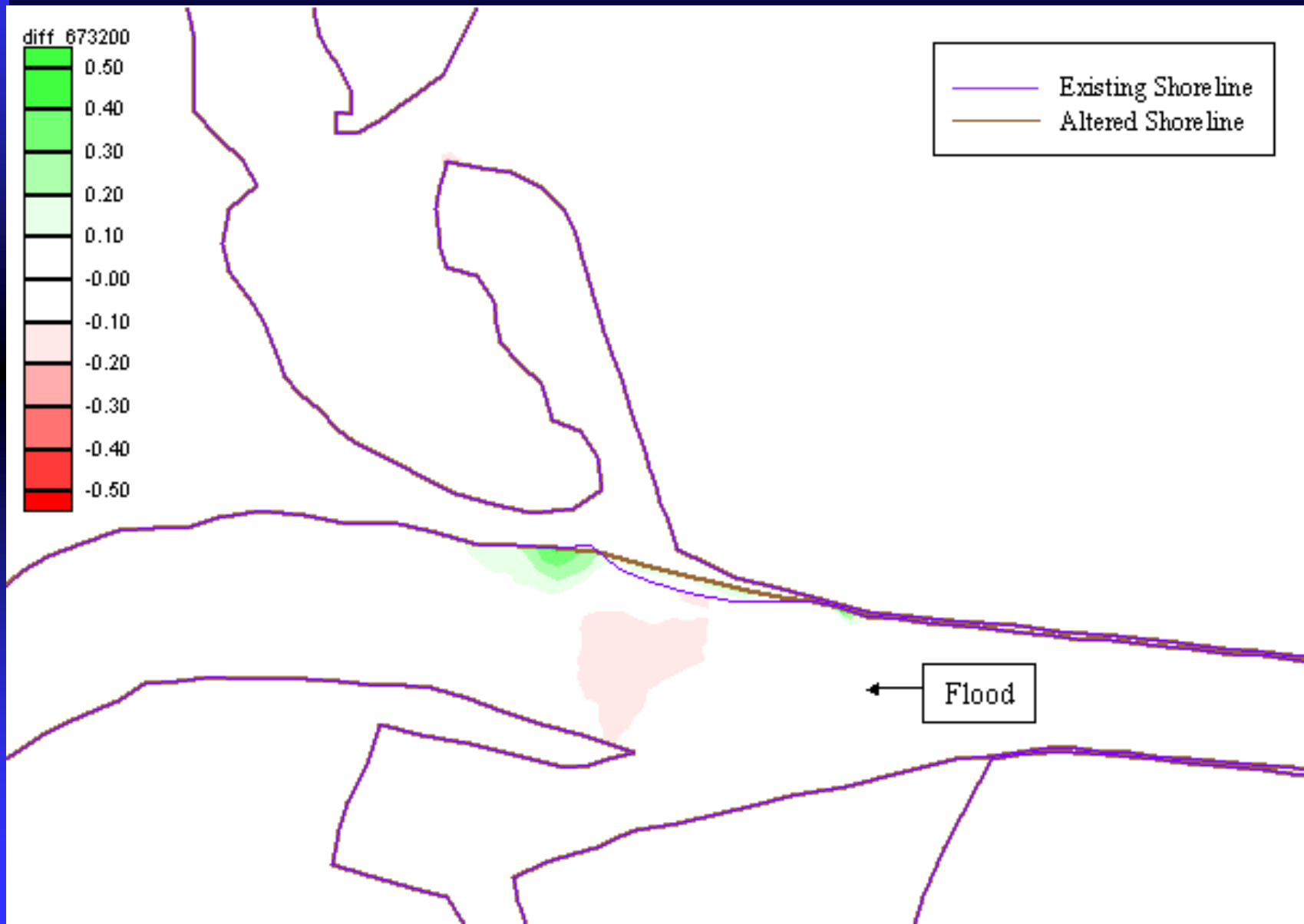


DEPOSITION BASIN EXCAVATION





Difference (Spring Flood Tide)





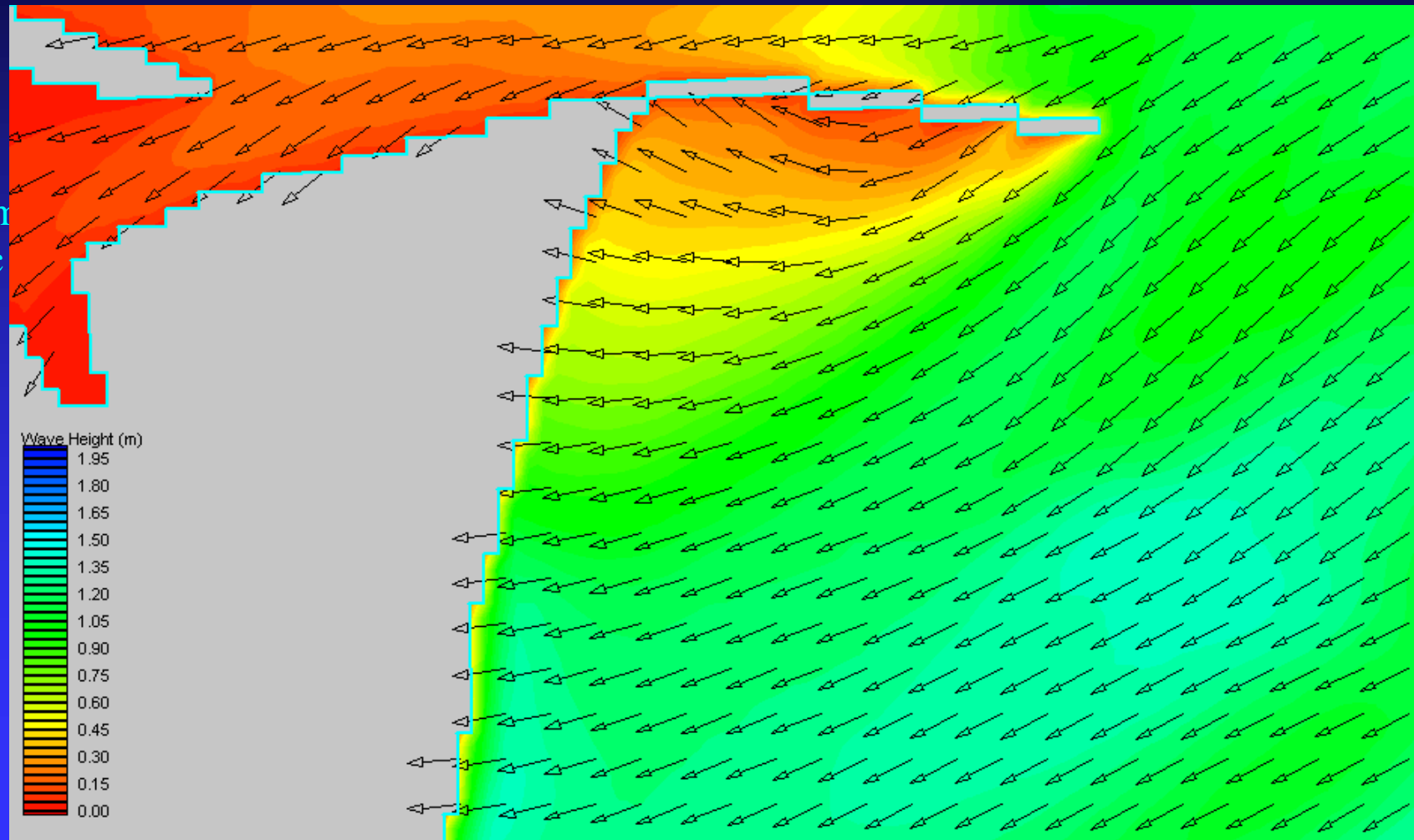
Difference (Spring Ebb Tide)





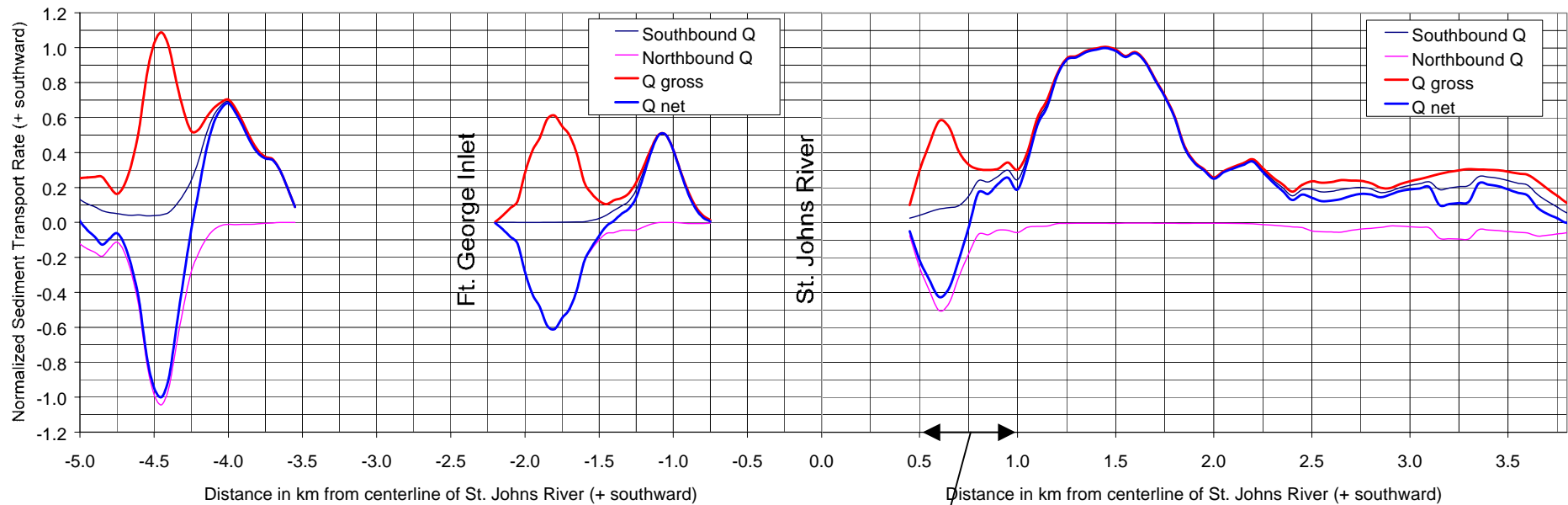
STWAVE ANALYSIS

Case 3-3:
 $H_{mo} = 1.3$ m
 $T_p = 12$ sec
 $\theta_0 = 45.4^\circ$





DOWNDRIFT NODAL ZONE



RSM PROGRAM NOTES

■ LESSONS LEARNED:

- ◆ Resource Agencies can be Receptive to Inlet Relocation
- ◆ “Too Much in System” Sand can be Major Issue

■ PROBLEMS ENCOUNTERED:

- ◆ Limited Federal Authority
- ◆ Funding

■ RECOMMENDATIONS:

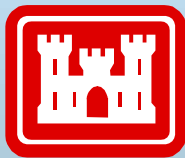
- ◆ Utilize Resources such as the Committee on Tidal Hydraulic to Evaluate/Validate Alternatives
- ◆ Mitigate before they Litigate

■ PLAN FOR FY03:

- ◆ Come to Consensus on Recommended Plan
- ◆ Complete Plans and Specifications Phase
- ◆ Identify Funding Sources

SOUTHWEST FLORIDA

REGIONAL SEDIMENT MANAGEMENT



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WORKSHOP RESULTS

- **WORKSHOP #1: Ft. Myers (June 5, 2001)**
 - ◆ **Relocate Stump Pass**
 - ◆ **Use New Pass as Borrow Source**
 - ◆ **Utilize Dredged Material From the GIWW for Ecosystem Restoration**
- **WORKSHOP #2: St. Pete Beach (June 7, 2001)**
 - ◆ **Use Side-cast Sand Bars in Tampa Harbor for Beach Fill**
 - ◆ **Place Marginal Material Offshore and Monitor Evolution of its Sediment Quality**
 - ◆ **Develop an Outreach Program for Improving Public Perception of Beach Restoration**

RSM PROGRAM NOTES

■ LESSONS LEARNED:

- ◆ Section 22 Funds Not Always Available
- ◆ Inlet Reopening Highly Contentious

■ PROBLEMS ENCOUNTERED:

- ◆ Physical Size of Southwest Florida Region
- ◆ Identifying Suitable Demonstration Projects

■ RECOMMENDATIONS:

- ◆ Continue to Workshop
- ◆ Develop Regional Sediment Budget

■ PLAN FOR FY03:

- ◆ Wrap-up Workshop
- ◆ Develop Demonstration Projects

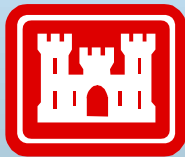
FY03 MILESTONES AND FUNDING NEEDS

- **Northeast Florida (Ft. George):**
 - **P&S Phase** **\$250,000**
- **Southwest Florida:**
 - **DMS** **\$80,000**
 - **Outreach** **\$20,000**
- **Central Florida:**
 - **Workshops** **\$50,000**
- **TOTAL** **\$400,000**

JACKSONVILLE DISTRICT

REGIONAL SEDIMENT MANAGEMENT

<https://rsm.saj.usace.army.mil>



US Army Corps
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